The Impact of Web Portal Characteristics, Expectancies, and Negative Word of Mouth on Perceived Institutional Support and Organizational Citizenship Behavior

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ABSTRACT

An organization's web portal is designed to support and represent the organization to key stakeholders both inside and outside of the organization. In terms of those inside the company, the web portal can be an important source of information and can contain work-related tools that help members to be more effective in their roles within the firm. Interestingly, management may not recognize all of the consequences of how the website/portal is perceived by employees. As an agent of the organization, the perceived usefulness and relevance of organizational technology can affect the degree to which members believe they are valued by the organization. This dissertation takes a first step in identifying how key perceptions of an organization's website/portal, in terms of effort and performance expectancies, can impact institutional support outcomes and perceptions of institutional support by members of the organization. This study also examines the moderating role of social influences, in this case negative word of mouth (WOM), and its moderating effect on the impact of IT perceptions on organizational perceptions.

Using organizational support theory (OST) as a foundation, this dissertation predicts that two IT beliefs, effort expectancy (EE) and performance expectancy (PE), will influence how an organizational member perceives how he/she is valued by the organization measured through perceived institutional support (PIS). This study also predicts that negative WOM will moderate the impact of PE and EE on PIS, and that PIS will significantly influence the organizational outcome of organizational citizenship behavior (OCB) intentions. Using both regression analysis and partial least squares (PLS) analysis, this study shows that PE significantly impacts PIS. The study also shows that PIS strongly predicts OCB intentions and that PIS mediates the relationship of IT belief PE and PIS to OCB intentions.

The findings suggest that IT beliefs have critical outcomes other than technology behavioral intentions and technology usage. IT beliefs have an impact on how members perceive they are valued by the organization. Furthermore, the findings show that IT beliefs can impact OCB, which represent behavioral intentions toward the organization.

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1 INTRODUCTION

In this digital era, organizations rely on technology to help shape and manage their relationships with both external and internal stakeholders. While one purpose of technology implemented by the organization is to improve communication and knowledge transfer between these two stakeholder groups, beliefs and perceptions about this technology may prevent these improvements from being realized. In fact, the perceptions of an organization's website may have an impact on the organization's overall relationships with its stakeholders. For example, negative reactions and beliefs about a company's website may lead to negative perceptions about the organization's reputation. Also, complex internal web portals that contain information seen as irrelevant to employees may lead to negative attitudes that can increase workplace stress, reduce job satisfaction and involvement, and could adversely affect other important work-related attitudes. The purpose of this dissertation is to determine the impact of information technology (IT) perceptions, as influenced by cues from the social environment, on individual perceptions of the organization. This dissertation also examines behavioral intentions that result from organizational perceptions. For this study IT refers to the relevant aspects of the organization's website, and the social influence studied is negative word-of-mouth (WOM) from peers.

1.1 *Research Objectives*

1.2 *Objective 1: Understanding the Impact of Web Portal Perceptions on Individuals' Attitudes about the Organization*

The first objective of this research is to investigate the impact of website perceptions on individuals' attitudes about the organization. In this dissertation, we focus on perceived institutional support (PIS) (LaMastro, 2001). PIS is defined as the individual's perception that an institution values his/her contribution and cares about his/her well being. This construct is an extension of the perceived organizational support (POS) construct and literature (Eisenberger, et al., 1986; Eisenberger, Fasolo and LaMastro, 1990; George et al., 1993) that describes how employees form global beliefs that an organization values and supports their contributions. Both constructs rely on Organizational Support Theory (OST), which describes the impacts of agents of an organization (e.g., supervisors, technicians, instructors, etc.), who act on behalf of the organization and influence how its members perceive the organization.

Organizational support theory asserts that members will form beliefs about the actions of the organization, its agents, or its representatives (e.g. support they provide, policies that are implemented, or treatment by supervisors or other organizational representatives). This dissertation asserts that an organization's technology is a mechanism implemented by the organization to communicate its policies, to assist in managing the members/employees, to represent the organization to its members, and to provide support for daily tasks so that members may perform their tasks better. Therefore, much like supervisors' actions and organizational policies, technology can be viewed as an agent of the organization and will shape the individual's perceptions of organizational support. This study investigates whether an individual's perceptions of IT, in particular, perceptions of the

organizational web portal, will spill over onto employees' global beliefs about the organization.

This dissertation focuses on two IT perceptions that may help produce this spillover effect: effort expectancy and performance expectancy (Venkatesh et al., 2003), formerly termed "ease of use" and "usefulness," respectively. Performance expectancy is defined as the degree to which an individual believes that using a system will help him or her make gains in task performance. Effort expectancy is defined as the degree of ease associated with the use of the system. One of the key hypotheses examined in this proposed dissertation is that high levels of performance expectancy (PE) and high levels of effort expectancy (EE) will have a positive impact on perceived institutional support.

1.3 *Objective 2: Understanding The Moderating Impact of Social Influences (Negative WOM)*

A second major objective of this proposed dissertation is to examine the impact of social influences within the organization on the perceived instrumentality of technology and on perceptions of support. While aspects of technology may influence how employees see the firm, these perceptions are not formed outside of the context of the organization and the interaction among its members. Thus, the influence of negative word-of-mouth (WOM) from other organizational members on expectancy relationships and perceived support is also examined. Social dynamics are pertinent in this relationship because individuals are not only influenced by formal structures and information received from agents of the organization, but also by advice and input from informal peer sources which shape the context wherein members interpret the actions of the organization.

Previous studies in the marketing and IS literatures have clearly shown the impact of WOM on individuals' perceptions, choices, and decision-making. Negative WOM has been

defined as interpersonal communication concerning the marketing of an organization or product that denigrates the object of the communication (Bone, 1992; Laczniak et al., 2001, Richins, 1984; Weinberger, et al., 1981) The current study proposes that negative word-of-mouth (WOM) moderates the relationships between PE and EE and perceived institutional support (PIS) such that when negative WOM is present, it decreases the positive impact of PE and EE on perceived support. Using an experimental approach, negative WOM generated from an electronic bulletin board is manipulated among a group of organizational members, and its impact measured. The moderating role of negative WOM on the relationship between the expectancies (PE and EE) and PIS is a second hypothesis tested in this thesis.

1.4 *Objective 3: The Mediating Impact of PIS on IT Perceptions and PIS Outcomes*

A third focus of this research is to determine the impact of IT perceptions on perceived support outcomes (Eisenberger et al, in press; Rhoades and Eisenberger, 2002). Prior research has shown that perceived support has numerous outcomes. One purpose of this study is to understand not only how IT perceptions impact perceived institutional support, but to understand how IT perceptions impact PIS outcomes. This study proposes and tests that perceptions of IT work through PIS to impact PIS outcomes. In other words, PIS mediates perceptions of IT and PIS outcomes.

1.5 *Research Contributions*

The study is intended to offer several contributions. First, this dissertation aims to provide an understanding of the impact of performance expectancy and effort expectancy on perceived institutional support. While the impacts of users' perceptions on intentions and performance have been demonstrated in prior IS research, the impacts of perceptions of an organization's website on the relationship between an individual and an organization have received little attention. The dissertation attempts to establish an important link between

individuals' perceptions of support by the organization and users' perceptions of organizational technology.

Furthermore, the dissertation intends to provide insight for understanding how the impact of IT perceptions is altered in the presence of negative WOM. Prior research (Galletta et al., 1995) demonstrated the impact of WOM on intent to use IT, but did not include the impact on individuals' perceptions of support by the organization sponsoring the technology. As a key index of social influence, negative WOM surrounding IT should impact how individuals perceive the technology and should spill over onto their judgments of the organization. This dissertation highlights the power of social cues via the presence of negative WOM on the perceptions of both technology used by the firm and employees' judgments of their relationship to the firm.

Finally, this study brings the extensive literature on organizational support theory into an IS context to enhance our understanding of the impact of IT beliefs on global attitudes toward the firm. In doing so, this dissertation adds to the literature's linkage between research in IT, organizational behavior, and organizational psychology. This study aims to demonstrate that researchers can use organizational support theory to gain additional understanding of how IT can impact perceptions of the organization, thus stimulating interest among IS scholars in the area of organizational support as a critical outcome variable worthy of future research in the IS arena.

2 REVIEW OF THE LITERATURE

2.1 *Perceptions of Support: The Institution and the Organization*

To understand how perceptions about organizational technology can impact perceptions of support, this dissertation focuses on institutional support. The perceived institutional support (PIS) construct has its origins in the broader construct known as perceived organizational support (POS). It is important to note that the outcome relationships and predictor relationships of both the PIS and POS constructs can be explained by organizational support theory (OST) (Eisenberger et al., 1986; LaMastro, 2001; Rhoades and Eisenberger, 2002). The key distinction between perceptions of institutional support (PIS) and perceptions of organizational support (POS) is the context surrounding the relationship being examined. The POS construct is used when studying perceived support in an employee-employer context, whereas PIS is used when studying perceived support in the student-institution/university context. This will be covered in more detail in the upcoming section.

2.1.1 Perceived Organizational Support

2.1.2 Origins of Perceived Support

Eisenberger and his colleagues developed the POS construct to more fully understand the relationship between employees and the organization. Specifically, the POS construct asserts that "employees develop global beliefs concerning the extent to which the organization values their contributions and cares about their well-being" (Eisenberger et al., 1986, p. 501). Early studies of POS focused on the antecedents and consequences of strong versus weak support (e.g., Eisenberger et al., 1986; Eisenberger, Rhoades, and Cameron, 1999; Shore and Shore, 1995; for a review, see Rhoades and Eisenberger, 2002). These

empirical efforts generally showed that perceived fairness, supervisor support, organizational rewards, and job conditions predicted employees' perceptions of support from the organization. This support is then reciprocated in the form of favorable or unfavorable employee behaviors. Thus, high POS produces outcomes such as strong organizational commitment, positive job-related affect, high job involvement, frequent citizenship behaviors, strong loyalty, and infrequent withdrawal behaviors (see Rhoades and Eisenberger, 2002).

Eisenberger et al. (in press) recently noted that an employee will be influenced by organizational factors that are personally relevant to him/her and will form a perspective of what the organization's general orientation is toward him/her based on this judgment. These factors include organizational policies and procedures, the availability of resources, and interactions with the agents of the organization. Furthermore, these organizational factors seem to contribute to the positive or negative orientation that members believe the organization has toward them. A key point is that individuals use personally-relevant organizational policies, programs, resources and interactions to form global beliefs about whether or not they are valued and supported by the firm. This aspect of Eisenberger's model and OST provides a fundamental assumption for this dissertation. Specifically, it implies that we can add organizational technologies to the list of factors that can shape individuals' perceptions of the firm and the level of support the firm provides them. Thus, perceptions of institutional support are shaped by key aspects of how members evaluate personally relevant technology that is sponsored or sanctioned by the firm. This means that IT serves as another antecedent of POS within the Eisenberger framework.

2.1.3 Antecedents to Perceived Support

The basis for including technology as another antecedent for perceptions of support is based on prior work outlined by Eisenberger and his colleagues. Rhoades and Eisenberger (2002) identify three major categories of POS antecedents: fairness of treatment, human resources practices, and support from organizational agents or representatives.

2.1.3.1 Antecedents to Perceived Support: Fairness

Fairness of treatment is discussed from two perspectives: distributive justice and procedural justice. Distributive justice refers to the perceived equity in distributing rewards to the employees, while procedural justice refers to equity in determining how these rewards will be distributed. Clearly, if an organization is perceived as being fair when allocating and distributing rewards, this would have a positive impact on the organization members. Shore and Shore (1995) found empirical support that both types of fairness lead to high levels of POS.

Also within the domain of fairness, Randall et al. (1999) examined organizational politics as an antecedent to perceptions of support. Organizational politics is described as an attempt to influence others in ways that promote self-interest, often at the expense of rewards for individual merit or the betterment of the organization (Cropanzano et al., 1997; Kacmar and Carlson, 1997; Nye and Witt, 1993). Randall and his colleagues found that perceived politics also shape perceptions of support and affect a variety of outcomes for employees. In addition to seeing perceived politics as an antecedent to POS, they found that taken together, politics and POS have an impact on a variety of outcomes that shape an employee's

perceptions of and behavior toward the firm. POS and perceived organizational politics together give a unique perspective on how workers react to their environment. This suggests that an employee's perception of actions, events, or the distribution of resources within the environment that are seen as helping versus hampering employees' performance on required work tasks are key drivers for perceptions of support. In addition, the informal process of allocating organizational resources (e.g., "politics") shapes perceptions of fairness which impact POS. Clearly, one can argue that organizational technology can be seen as an important work-related resource, distributed within the firm, and perceived either as helpful or as obstacles to employees in the performance of their jobs. This view provides some conceptual support for the idea explored in this dissertation that technology can also impact employees' perceptions of organizational support.

2.1.3.2 Antecedents to POS: Human Resources Practices

The second category of POS antecedents, Human Resource (HR) practices, refers to standard organization-wide practices implemented to support, manage and reward employees. These practices should have an impact on POS because they are specifically geared toward employees and could be perceived as an investment in human capital by the organization. This perception in turn could lead employees to perceive that they are valued, thus resulting in a higher level of POS (Eisenberger, in press). For example, job security, autonomy and training are a few of the specific HR practices that have been found to lead to high levels of POS. Job security refers to the assurance that the employer wants to continue to maintain the employee's future membership. Autonomy focuses on employees' perceived control over how they perform their jobs. If employees believe that they have been entrusted with higher levels of autonomy and security, they will be more likely to believe that the

organization values them. Thus, actions by the organization that enhance employees' competency, autonomy or control should lead to high levels of perceived organizational support. For example, training is an HR practice that has been shown to be an antecedent to POS (Rhoades and Eisenberger, 2002; Wayne et al., 1997) because it is viewed as an investment in human capital, and thus, it is a discretionary action by the firm. If an employee believes the employer willingly invests in developing his/her potential by going beyond the mere perception of upholding federal laws, regulations or industry standards, the employee feels more valued and supported. Therefore, training as a specific example of HR practices contributes to enhanced perceived support by employees of the organization (Rhoades and Eisenberger, 2002).

2.1.3.3 Antecedents to POS: Support from Organizational Agents

Support from organizational agents is a key category of antecedents that shape POS. According to Rhoades and Eisenberger, antecedents to POS are seen as an investment by the firm in its employees. Actions taken by agents of the organization are interpreted as signals that the organization cares about and values its employees, their performance and their overall well-being. As a result, the presence of these antecedents strengthens employees' perceptions of organizational support. Therefore, it would make sense to include some aspects of technology made available to employees as an additional antecedent to POS. Interestingly, many of the HR training activities and support in organizations today are frequently mediated via technology. The growth in human resource information systems (HRIS) has been substantial in recent years (Stanton and Coovert, 2004), giving rise to additional evidence for the proposition that technology and perceptions of organizational support are indeed connected.

2.1.4 Perceived Support and IT

Although little attention has been given to the impact of IT on perceived support, there is some related work that provides an appropriate starting point for the proposed research. Huang et al. (2004) examined the impact of business-to-employee (B2E) benefit systems on POS and organizational citizenship behavior (OCB). The specific B2E system examined was an online shopping portal that allows employees to purchase a variety of products and services at discounted prices. An employee can rent a car, book a hotel room, order books for personal use, or purchase a variety of other products that are sold at discounted prices. To understand the impact of this system on POS, Huang et al. (2004) measured end user satisfaction (Doll and Torkzadeh, 1988, Doll et al., 1994) along with employees' perceptions of organizational support. Their empirical findings indicate that satisfaction with the B2E system was a strong antecedent to POS that subsequently impacted organizational citizenship behavior through perceptions of support.

This is an important finding for establishing an initial link between individual perceptions of IT and POS. Clearly, individuals' experience with IT influenced perceptions about the organization in the previous work. However, the focus of this dissertation varies from the Huang study in terms of both the role and operationalization of IT. Huang's research focused on a benefit system which was not needed for the employees to accomplish their work-related tasks. That is, the system examined in Huang's study allowed employees to purchase non-work-related items (shopping) and plan non-work-related trips. Thus, the level of personal and work task relevance for individuals in Huang's study may have been somewhat limited. This dissertation advances the previous work by Huang and focuses on technology that is valuable but not mandatory for individuals in order to accomplish tasks.

The impact of a university web portal is explored among a student population that utilizes this technology for personally-relevant tasks such as obtaining information for registration, searching library databases, or obtaining class information. These tasks may be performed via other means (e.g., hard copy schedules); however, the availability of technology-enhanced access can signal an investment by the institution in its key stakeholders: students. This study argues that the perceptions of this personally-relevant technology will drive students' levels of perceived institutional support. While it may not be appropriate to discuss technology in terms of "fairness" as in the case of organizational policies and programs, it is appropriate to focus on the perceived usefulness of technology in terms of supporting the work of the user. Thus, technology sponsored or sanctioned by the organization becomes a proxy for or an agent of the organization by helping the individual accomplish personally relevant work/school-related tasks. However, in order to fully understand how technology and perceived usefulness drive employee perceptions of their relationship to the organization, we must take a closer look at the theoretical framework of organizational support theory.

2.1.5 A Conceptual Model of Perceived Support

Organizational Support Theory (OST) explains the relationship between the employee and the firm. It asserts that employees not only form opinions about the organization, but also about organizational agents, its representatives and its actions (see Figure 1). These agents can include supervisors, managers, executives, etc. The perceptions formed about the organization are based on actions by these agents or representatives of the firm. Employees make judgments or evaluations of these actions based on expectations,

individual beliefs and external factors (e.g., social norms, group dynamics). The interaction of individual judgments and actions of the organization shape employees' perceptions of organizational support. Once formed, perceptions of support can have an impact on a wide variety of outcomes such as work-related attitudes (e.g., satisfaction, commitment, and involvement), work behavior (absenteeism, turnover, citizenship) and subsequent interactions between employees and the firm (see Eisenberger (in press); Rhoades and Eisenberger, 2002).

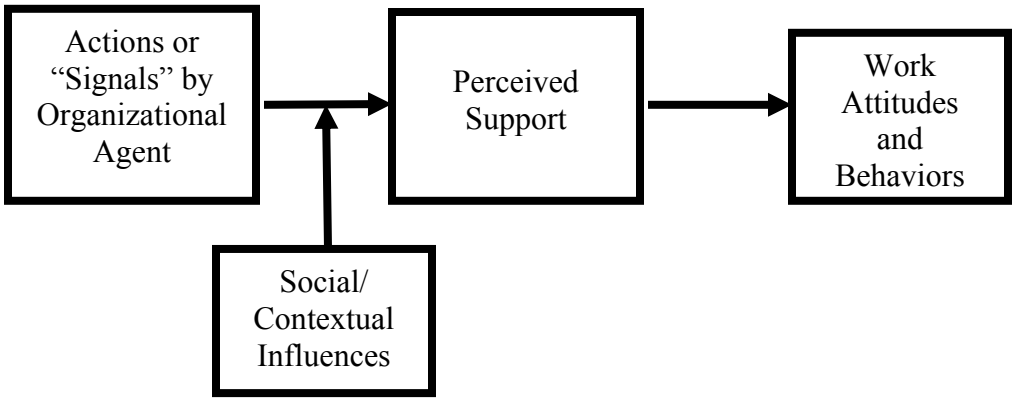
The basis for organizational support theory is the social exchange [see Eisenberger (in press), Rhoades and Eisenberger, 2002; LaMastro, 2001; Eisenberger et al., 1986] which takes place between employees and agents of the firm. For example, leaders have direct contact with their followers and engage in the processes of feedback, decision-making and resource distribution on behalf of the organization. A leader's favorable or unfavorable action toward a follower is indicative not only of support by the leader, but also of support by the organization that the leader represents (Rhoades and Eisenberg, 2002; Eisenberger et al., 1986; Levinson, 1965). Prior research on leader-member exchange (LMX) clearly shows the importance of the link between a leader as an agent of the organization and the follower. LMX has also been linked empirically to employees' level of POS (Wayne et al., 1997). Not only do representatives of the organization help to form a member's opinion about his or her value to the organization, but also the interactions between the agents of the firm and the employee enhance perceived support.

Additional empirical evidence for organizational support theory was found by Eisenberger and his colleagues for the specific actions of a supervisor in the organization (Eisenberger, Stinglhamer, Vanderberghe, Sucharski and Rhoades, 2002). Within this work,

Eisenberger and his colleagues explore the distinct role that perceptions of supervisor support play contrasted with perceptions of organizational support. While this research showed that perceived supervisor support (PSS) and perceived organizational support were distinct constructs, it also showed that PSS was an antecedent to POS. Thus, perceptions of support are driven by agents of the organization (e.g., leaders, supervisors, managers) to the extent that these actions are relevant to the members, are perceived to be sanctioned by the organization, and have significant impact on members' work-related tasks or activities.

The interaction with the agents of the organization is of particular importance to the current work. This study proposes that interacting with the organization's website helps to shape perceptions of the organization and its efforts to provide the needed resources and tools for its members to accomplish their tasks. For example, slow response time when executing a database query can bring about frustration for the employee, and can hinder him/her when completing crucial assignments. This frustration, brought about by interacting with the technology, could lead to low levels of POS. Thus, technology can be viewed as an agent of the organization in that it is seen by employees as a form of support provided to them for accomplishing personally relevant work tasks in the same manner that supervisory-subordinate relationships operate within the LMX model. Figure 1 illustrates the basic model addressed in this study.

Figure 1 -- Basic Conceptual Model of Perceived Support



2.1.6 Perceived Support: From the Organization to the Institution

POS was originally developed for and applied to an employee-employer context. LaMastro (2001) adapted the POS construct to develop the PIS construct. The PIS construct is used in a student-institution/university context. As stated earlier, it is important to note that both constructs use the same underlying theory, organizational support theory, to explain their relationships. LaMastro (2001) extended the concept of perceived support to a university context, wherein she examined the relationship of university students with their institutions. LaMastro asserted that the social exchange that exists between university students and their organizational representatives has the same underlying concepts as the employee-employer exchange relationships, except that the context differs. Consequently, the rich empirical findings and measures that were used to study perceived support in the employee-employer context can be used when making predictions in the student-university context. LaMastro's research found support for the application of PIS within the university context by finding that students do form global perceptions that their university supports and

values them. More specifically, she found that perceived institutional support (PIS) impacts students' level of involvement and satisfaction with the university.

The current study intends to follow the approach outlined by LaMastro and will examine how perceptions of information technology within a university setting impact student levels of PIS. As stated in regard to both institutional and organizational support constructs, the current research recognizes that the infusion of technology by the university in support of the students has significantly impacted the exchange process within the university environment over the years. Therefore, it is necessary to gauge how IT is perceived by the students as a validation that technology is regarded as an antecedent to perceptions of support. If LaMastro's application of the POS construct to the university setting is robust, this research should find that perceptions of student-relevant IT can shape students' levels of PIS. Thus, perceptions of IT will be examined as key factors affecting the degree to which organizational technology impacts student perceptions of institutional support. To fully understand IT perceptions, and outcomes of those perceptions, the technology acceptance literature is reviewed in the next section.

2.2 *Technology Acceptance Model (TAM)*

2.2.1 Performance and Effort Expectancies

Performance and effort expectancy were developed in the technology acceptance literature (Davis, 1989; Davis et al., 1989; Venkatesh et al., 2003). Performance Expectancy (PE) has evolved from the perceived usefulness (PU) construct, and Effort Expectancy has evolved from the perceived ease of use (PEOU) construct (Davis, 1989; Davis, et al., 1989; Venkatesh et al., 2003). The technology acceptance model (TAM) (Davis, 1989) was developed to predict, explain, and increase acceptance and use of technology. Building on

the theory of reasoned action (Azjen and Fishbein, 1980; Fishbein and Azjen 1975), Davis argued that beliefs about technology influence attitudes, which in turn influence intentions, and subsequent technology usage.

Davis stated that perceived usefulness (PU) and perceived ease of use (PEOU) were two important beliefs supported by IS research and practice that influence attitudes and intentions. PU is defined as the user's subjective probability that using a specific application system will increase his or her job performance within an organizational context. PEOU refers to the degree to which the prospective user expects the use of the target system to be free of effort (Davis et al., 1989; Davis, 1989). Although PU and PEOU are distinct constructs, they are conceptually and empirically related. In fact, a number of studies report that PU is positively related to PEOU (Davis, 1989; Davis et al., 1989; Venkatesh et al., 2003; Venkatesh and Davis, 2000). Furthermore, both PU and PEOU are positively related to attitudes toward technology and intentions to use the technology (although PU's effect on intentions is stronger).

2.2.2 Empirical Findings and TAM

The TAM has been extensively studied in a variety of contexts, in work-related and non-work-related tasks, with a variety of technology and by using a variety of methodologies. For example, Lederer et al. (2000) examined technology acceptance of World Wide Web (WWW) work-related tasks. Their study had two objectives. The first was to validate TAM in the context of the web and to identify antecedents of web ease of use and usefulness. Lederer et al. (2000) found support for the TAM in the context of the web. This work also gave more insight into the relationship between PEOU and PU and acceptance of

web technology by users. The instrument they used was tailored specifically for web applications and was found to be a valuable measure of technology perceptions.

A number of subsequent studies have been conducted that have advanced the theoretical and empirical development of TAM. Recently, Venkentash et al. (2003) conducted an exhaustive meta-analysis of technology acceptance research and categorized the majority of TAM studies available in the extant literature. Venkentash and his colleagues identified several "meta-constructs," two of which are of particular relevance to the current study: performance expectancy (PE) and effort expectancy (EE). PE is the extent to which an individual believes that using the system will help him or her attain gains in task performance. EE is the degree of ease associated with the use of the system. Both capture the individual's perceptions of technology and its fit for work-related activities. Because Eisenberger et al. (in press) argues that POS is based on an individual's experience with personally relevant organizational policies and procedures, the receipt of resources and interactions with agents of the organization, this research argues that PE and EE will enhance POS for the students who utilize this tool and find the tool personally relevant. Because students regularly interact with the university web portal, which is implemented on behalf of the university to provide services and support, the students' perceptions of this technology, given that it is seen as useful and relevant to their work as students, will shape their views of whether the institution supports them and cares about them. Thus, both factors (PE and EE) will contribute to students' overall view of how the institution supports them (PIS).

While the individual's assessment of technology is a key factor, it is reasonable to conclude that it is not the only driver of perceived support. Individuals' perceptions of technology and its impact do not take place in a vacuum. This point is particularly relevant in a student

context where peers and the social network play an important role in affecting attitudes, decision making and other behaviors. Thus, it is reasonable to expect that social influences also play a role in how individuals make judgments about key factors within their environment. Thus, social forces that are relevant to individual judgments about the institutional technology are also included in the proposed work. Specifically, the impact of negative WOM on the relationship between perceived institutional support and the expectancies (both PE and EE) is examined.

2.3 *Word Of Mouth (WOM)*

Perceptions of institutional technology are driven by one's internal assessments and by the social context of an individual. The social cues within the environment are important sources of information that can shape individual judgments and attitudes. Both positive and negative information could come from sources internal or external to the organization. Furthermore, WOM exerts a powerful influence on attitudes and choices, and negative information is often more salient within the decision-making process compared to positive information. Thus, negative WOM from peers should have a significant impact on how the organization's agents or the university's website is perceived.

The phenomenon of WOM is a very important force in the marketplace (Silverman 2001; Laczniak et al., 2001; Bone, 1992; Feick and Price, 1987; Richins, 1984; Arndtz, 1967) and has been studied in a number of research disciplines such as psychology, communication and marketing. Consumers rely on other consumers as informational sources and receive information about products, services, or even organizations. Research over the years has demonstrated that exchange of information among consumers is prevalent, and that this exchange strongly influences consumer preferences and decisions (Laczniak et al., 2001; Higie, Feick, and Price, 1987; Arndtz 1967). Some believe that WOM is the most powerful

force in the marketplace affecting consumer attitudes and perceptions (Silverman, 2001; Webster, 1991).

In many cases consumers who experience a product or service will offer unsolicited opinions, while in other cases, consumers contemplating a purchase may actively seek this information. Obtaining WOM is a common method of reducing uncertainty, thus allowing the consumer to make a more informed or educated decision. Over the years, WOM has been studied both as an antecedent (Bone, 1995; Herr, Kardes and Kim, 1991; Sheth 1971) and as an outcome variable (Laczniak et al., 2001; Feick and Price, 1987; Richins, 1983) in consumer attitudes, preferences and choices.

A great deal of research within this area shows that negative WOM has a stronger impact than positive WOM. For example, Herr, Kardes, and Kim (1991) studied the effects of negative versus positive WOM, where positive WOM was described as communication that is favorable: relating pleasant, vivid, or novel experiences, and generally good recommendations to others (Anderson and Weitz, 1989); while negative WOM was described as an exchange of comments, thoughts, and ideas that denigrates the object of the communication. Herr, Kardes and Kim (1991) placed subjects in small groups where they read a product description of a computer. While in the small group, a group member (actually a confederate) would say that he or she owned a computer like that and loved it (positive WOM) or hated it (negative WOM) depending on the treatment group. They found that both positive and negative WOM had an impact on attitudes toward the product, but that the impact of negative WOM was stronger than positive WOM. These findings are important in showing the impact of negative WOM on individual attitudes, and lend support

to the relevance and feasibility of studying the impact of negative WOM in the proposed dissertation.

2.4 *TAM and Perceptions of Support*

While most of the TAM work examines behavioral intentions and IT usage as key outcomes, the PIS/POS literature focuses on a wide variety of individual outcomes that will be detailed later. Whereas TAM research uses the theory of reasoned actions (Azjen and Fishbein, 1980; Fishbein and Azjen 1975) to predict outcomes such as user intentions and technology use, organizational support theory (OST) uses the norm of reciprocity (Gouldner, 1960) to theoretically support predicted behavioral and attitudinal outcomes of perceived support.

Fundamental to applying the norm of reciprocity to explain perceived support outcomes is OST's acknowledgement of certain person-organizational interactions. In particular is Levinson's (1965) position that members of an organization view actions by agents or representatives of the organization as not only actions of the agent, but also as actions of the organization. Furthermore, OST suggests that an individual will personify the organization and make inferences about the quality of the relationship, as they would in a human social relationship, based on actions by the organization or its agents (Eisenberger et al., 1986; LaMastro 2001; Rhoades and Eisenberger, 2002). These inferences or judgments about the actions of the organization and/or its representatives/agents will lead to judgments of how they and their contributions are valued by the organization, and are called perceived support.

Because OST acknowledges that people personify organizations and respond to cues in the relationship as they would in a human relationship, the norm of reciprocity can explain behavioral and attitudinal outcomes of perceived support. The norm of reciprocity states that

people will treat others as they have been treated. Gouldner (1960) suggests that the norm of reciprocity is universal, but is not unconditional. Furthermore, he adds it contains two minimal but related demands: (1) people should help those who have helped them, and (2) people should not injure those who have helped them. In the organizational context, a member of the organization will interact with representatives of the organization and form opinions about these interactions. An individual will also form opinions about the policies and practices that are in place. The norm of reciprocity suggests that a favorable view of these actions will result in favorable actions or attitudes by the individual on behalf of the organization. In other words, high levels of perceived support will lead to favorable actions by the organizational member towards the organization.

2.4.1 Perceived Support & IT: Defining Outcomes

Some specific perceived support outcomes studied in the OST literature include work attitudes (satisfaction, involvement, commitment). Perceived support has been related to behavioral outcomes such as absenteeism and voluntary turnover (Rhoades and Eisenberger, 2002; Eisenberger at al., in press). A key behavioral outcome of perceived support that is related to outcomes within the TAM is organizational citizenship behavioral (OCB) intentions. Behavioral intentions within the TAM model focus on intentions to act in a manner that either benefits or hinders the organization. Within the previous work on perceptions of support, citizenship toward the organization is studied in a similar vein. The primary idea is that perceptions of support are not an end in themselves; rather, they facilitate key behavioral outcomes that impact the organization or the institution.

OCB is defined as additional things employees do that are beneficial to the organization, but are not required of the individuals (Huang et al., 2004; LaMastro, 2001; Lambert 2001; Schnake, 1991; Smith et al., 1983; Konovsky and Organ, 1996). These additional actions could include, for example, assisting another co-worker with a problem, attending social functions of the organization, or contributing to the United Way campaign. In a university context, LaMastro (2001) adapted the traditional concept of OCB to an educational context and assessed students' intent to contribute to the university as an alumnus or intent to participate in alumni meetings. She found that high levels of perceived institutional support predicted positive citizenship behavioral intentions. Thus, PIS not only has an impact on attitudinal outcomes, but is also related to behavioral outcomes such as OCB intentions, a notion consistent with previous TAM research.

3 THEORETICAL MODEL AND HYPOTHESES

3.1 *Technology and Perceptions of Support: Theoretical Framework*

This dissertation focuses on evaluations of organizational technology (the organization's website) and the impact of these judgments on perceptions of the organization, namely perceived institutional support (PIS). Information technology (IT) can cover a wide variety of software, hardware and/or processes. This research focuses on the organization's web portal and on members' perceptions of the website technology. The web portal was chosen because of its pervasiveness in a wide variety of organizations. Websites are growing in importance in many organizations and they are being used to provide a wide variety of services to members of the organization. Understanding how perceptions of the website spill over to perceptions of the organization can provide critical insights to researchers and practitioners. To explain the relationship between IT perceptions and PIS, this study draws

on organizational support theory (OST) and the perceived organizational support construct (Eisenberger et al., 1986; Rhoades and Eisenberger, 2002; Shore and Shore, 1995) and applies them within an IT context.

This research builds on prior work in social psychology, organizational behavior and management information systems to study the role of technology in shaping individual attitudes and behavioral intentions. More specifically, technology acceptance research demonstrates that two key IT beliefs, performance and effort expectancy, impact behavioral intentions and eventually technology use. This dissertation attempts to go a step beyond immediate consequences and illustrates the impact of IT beliefs on perceptions of the organization; in particular, perceived institutional support. For instance, if an organization provides its members with a sub-par website that is difficult to use or lacks usefulness, this action of the organization could be viewed as neglectful, or even as an obstruction, and could contribute to negative perceptions about the organization.

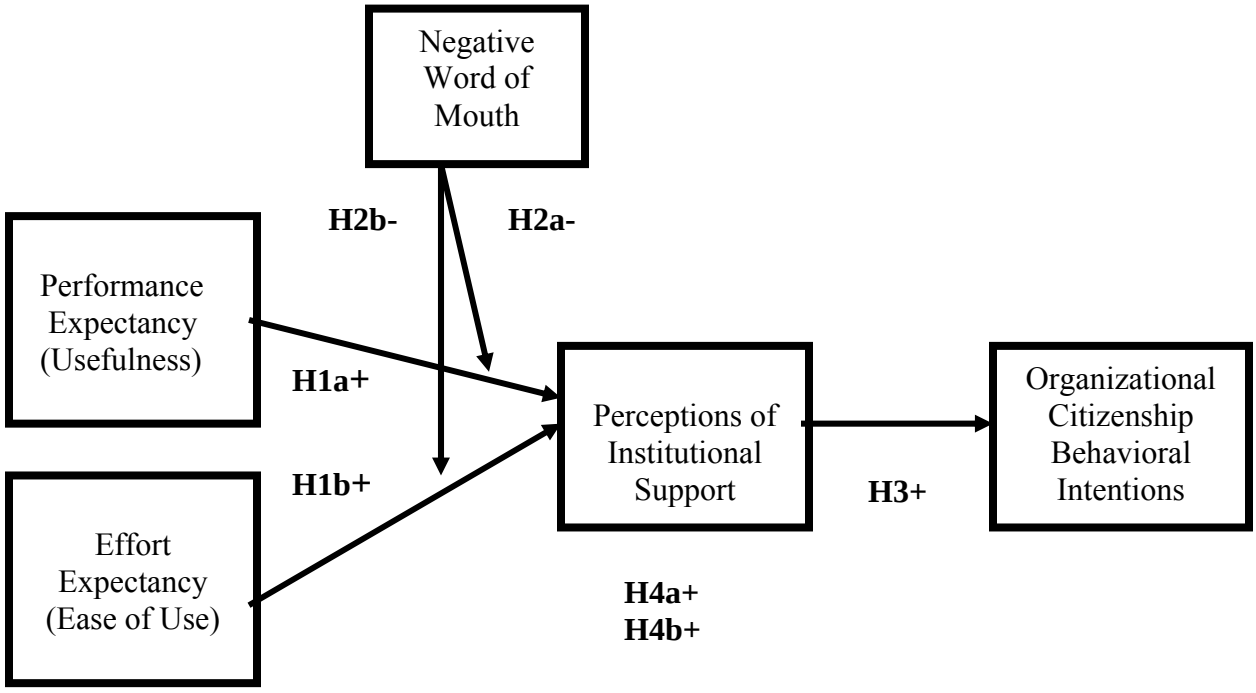
This act of providing sub-par technology could lead members to feel the organization is not supporting them and does not care about them, thereby producing low levels of perceived institutional support. The reverse should also be true in terms of positive perceptions of the technology leading to high levels of perceived support. Thus, PE (performance expectancy) and EE (effort expectancy), which address the usefulness of and the ease of use of technology respectively, can be key antecedents that drive individual perceptions of organizational and institutional support.

3.2 *Research Model and Hypotheses*

The research model for this dissertation is illustrated in Figure 2. This model tested in this dissertation is based on the assumption that beliefs about IT spill over onto

perceptions or beliefs about the organization. Furthermore, the website provides support and services on behalf of the organization. Thus, technology is seen as an agent of the organization and judgments made by individuals about this technology impact perceptions of organizational support thereby affecting individual behaviors and attitudes.

Figure 2 -- Research Model of Perceived Support



This relationship is based on principles outlined by organizational support theory (Eisenberger et al., 1986; Rhoades and Eisenberger, 2002; Shore and Shore, 1995), which assume that the development of perceived support is fostered by employees' personification of the organization (Eisenberger et al., 1986; Eisenberger et al., in press). Building on Levinson's work (1965), organizational support theory (OST) assumes that employees tend to attribute actions of the agent of an organization as actions of the organization itself. Furthermore, OST asserts that organizational members use attribution processes similar to

those used in interpersonal relationships to determine how the organization values them. Thus, positive actions of the organization or its agents toward its members could lead to perceptions of being valued by the organization, thus having high levels of perceived support. Conversely, actions by the organization or its agent that are perceived as negative could lead to low levels of perceived support.

It is important to note that there is no direct link between negative WOM and PIS in the model. The WOM in this study addresses the technology and not the institution. The scope of each construct therefore implies moderation in this case.

As documented in the literature review of this dissertation, the organizational support literature has studied many beliefs that organizational members hold about their organization (e.g., perceived politics, perceived supervisor support, beliefs about organization policies, and beliefs about leader-member exchange) and the impact these individual judgments have on perceived organizational support. This dissertation argues that an individual will also form beliefs about the IT that the organization provides its members. It is this judgment about the information technology that can spill over onto perceptions about the organization. This empirical study described in this document tests whether beliefs about information technology are an additional source of influence that can help explain levels of perceived institutional support in a university context

Thus, this dissertation examines the specific context of website perceptions, and its impact on perceptions of institutional support among students. In the empirical model tested by this dissertation (see Figure #2), individual expectancies (PE and EE) of the university website should operate as an antecedent to perceived institutional support. This study explores the idea that by its purpose, function and characteristics, the organizational website

is an agent of the organization, and as such, individuals' perceptions of this agent should be an antecedent to perceived support. In other words, interacting with the university website will shape students' perceptions about the quality of that interaction, and this could impact how the students perceive they are supported by the university; thus influencing perceived support.

Furthermore, in a university context, students may frequently interact with the university website. This technology should be a useful tool to help students who must complete personally-relevant tasks (e.g., registration, course-related research) and accomplish individual goals (e.g., career planning, timely graduation). It is not simply the mere presence of technology that creates a positive sense of organizational support. However, it is the individuals' perceptions of this technology that will also determine whether or not this technology contributes to or detracts from PIS. It is important to determine whether individuals perceive that this website helps the user better attain a goal, PE, or is it perceived to be unproductive or difficult to use (captured through measuring EE).

Having a system that can help an individual complete his/her tasks or attain certain gains is an important part of implementing technology. However, even if the system can provide the needed information and functionality, these gains from the system may not be utilized if the system is too cumbersome or too difficult to use. Hence, measuring effort expectancy along with PE will yield a more complete set of antecedents of IT beliefs and can help explain how these beliefs will impact PIS. According to organizational support theory (OST), various forms of favorable treatment should contribute to higher levels of PIS. Fairness, favorable treatment and interactions with organizational representatives, and satisfactory conditions all contribute to PIS. Another concept that is important to

organizational support is the concept of discretionary actions. This is important because not only is it relevant that organizational members are treated fairly, or that they are provided with the tools they need to perform their tasks, but knowing that the organization did this without being required to do so should increase levels of perceived support/PIS. Some may view providing students with technology as an industry norm; therefore close to being a requirement. However, if in addition to providing functionality this technology is also free of effort, this may be viewed as a discretionary act by the organization and not just a required act. Therefore, higher levels of EE should lead to higher levels of PIS.

Prior research suggests that ease of use and usefulness are related but distinct constructs (Davis, 1989; Davis et al., 1989). This is also true about the recently developed effort expectancy and performance expectancies (Venkatesh et al, 2003). The current study suggests that technology that is perceived to have high levels of effort expectancy can be perceived as the organization, in this case the university, giving an extra effort to accommodate its members, in this case the students. Therefore we believe higher levels of EE will lead to higher levels of PIS.

Higher levels of performance expectancy (PE), and effort expectancy (EE), will produce higher levels of perceived institutional support (PIS).

Hypothesis #1a: Positive judgments of performance expectancy will have a positive effect on level of perceived institutional support.

Hypothesis #1b: Positive judgments of effort expectancy will have a positive effect on level of perceived institutional support.

Judgments about the organization are rarely made in a vacuum or outside of the social context. Organizational support theory lends itself to the notion of contextual factors

influencing the relationship between perceived support and its antecedents. This dissertation explores the important impact that social cues play in shaping perceived institutional support in a university context.

Negative WOM from peers is examined and is expected to influence the impact of IT beliefs, PE and EE, on perceptions of institutional support. Due to the social context of the exchange relationship, there are factors in the social network that can influence the strength of the exchange relationship and influence perceptions. These social influences could include peers, fellow students, the press, or university sponsors. Due to the prevalence of peer influence in a university environment, this study focuses on negative word-of-mouth (WOM) communication and its moderating impact on the relationship between IT beliefs, performance expectancy (PE) and effort expectancy (EE), and perceived institutional support (PIS). Additionally, prior IT research (Galletta et al., 1995) suggests that negative WOM can negatively influence IT attitudes and usage. Consistent with prior IT and marketing research, negative WOM should have a negative impact in this context.

Impression formation (Fisk, 1980; Klein, 1996; Skowronski and Carlston 1987) research in psychology suggests that when given positive and negative information about a person, the subject forms an overall impression about that person using the negative information (Ahluwalia et al., 2000). This behavior has been studied using products and services to include technology. Furthermore, it is believed that this negative information, due to its nature, usually more vivid and specific, can influence the positive information. Therefore, when given negative WOM about the technology that the university provides, this model predicts that the influence of PE or EE on PIS will be negatively moderated. Thus peer input, along with the individual's own judgments of the technology's usefulness, should

result in moderating the impact of expectancies (performance and effort) on perceptions of institutional support.

Hypothesis #2a: Negative WOM will negatively moderate the relationship between performance expectancy and perceived institutional support.

Hypothesis #2b: Negative WOM will negatively moderate the relationship between effort expectancy and perceived institutional support.

Perceptions of institutional support are critical because they have a range of attitudinal and behavioral outcomes. Because organizational support theory (OST) acknowledges the social exchange between the individual and the organization and has its roots in the norm of reciprocity (Gouldner, 1960), as detailed in the literature review, it assumes that individuals will treat others as they have been treated. In this context, OST is assuming that an organizational member, the university student, will treat the university as the university and/or its representatives have treated him/her. More specifically, the norm of reciprocity gives theoretical support for predicting that PIS will directly influence OCB intentions. That is, the more the individual perceives that the university cares about them and values them, the more favorable non-mandatory actions he/she will demonstrate towards the university. The reverse is also true, the less the individual feels they are valued by the university, low levels of PIS, less favorable actions will be demonstrated towards the university.

Thus, perceived support produces a range of outcomes (e.g., organizational commitment, affective commitment, felt obligation, desire to remain, and organization citizenship behavioral (OCB) intentions) that have been demonstrated in prior empirical work (Eisenberger et al., in press; Eisenberger, et al., 2002; LaMastro, 2001; and Eisenberger

et al., 1997). To include a measure of behavioral intentions, this study focuses on organizational citizenship behavioral (OCB) intentions that are reported by students in this university context. If students perceive that the university is treating them well, then, based on organizational support theory, students will have favorable intentions toward the university. These favorable intentions are not required of the student, but are a result of high levels of favorable treatment and support from the university. LaMastro (2001) demonstrated that PIS has an impact on OCB intentions of university students and is expected to have an impact in this study. Consistent with LaMastro's work and prior perceived support findings, perceptions of institutional support are expected to impact citizenship intentions among students (see Figure #2).

Hypothesis #3: High levels of perceived institutional support will have a positive effect on the level of organizational citizenship behavioral intentions.

The mediating impact of perceived support has also been demonstrated in the literature (e.g., Rhoades et al., 2001; Moorman et al., 1998; Wayne et al., 1997). As mentioned earlier, organizational support theory has as its foundation social exchange theory, and specifically, the norm of reciprocity. OST explains how organizational members personify an organization and ascribe human-like characteristics to that organization (Eisenberger et al., 1986, Rhoades et al., 2001, Rhoades and Eisenberger, 2002). Furthermore, the members will form beliefs about how the organization values them, defined in this model as PIS. These beliefs will lead to favorable or unfavorable outcomes toward the organization from the members, or OCB intentions. This attribution process provides the theoretical explanation for predicting a mediating role of POS between perceived usefulness of technology and behavioral outcomes.

Empirically, Rhoades et al. (2001) demonstrated that POS mediated the relationship of organizational rewards, procedural justice and supervisor support with affective commitment. The implications of these findings suggest that favorable work conditions operate through POS to increase affective commitment. Similarly, Wayne et al. (1997) found that POS mediated the relationship between a number of organizational experiences and organizational citizenship behavior (OCB). Drawing on this theoretical and empirical research, this dissertation proposes that PIS will mediate the relationship of IT expectancies and OCB intentions in the university context where students access and make judgments of the technology sponsored and provided by the institution.

Hypothesis #4a: Perceived institutional support will mediate the impact of performance expectancy on organizational citizenship behavioral intentions.

Hypothesis #4b: Perceived institutional support will mediate the impact of effort expectancy on organizational citizenship behavioral intentions.

The proposed model has several important implications for Information Systems (IS) research and practice. The importance of technology and how IT beliefs can spill over and impact individuals' perceptions of and relationships with the organization is a significant contribution. In addition, establishing the relevance of organizational support theory within an IT context opens up a great deal of potential for future research to explore POS and its impact on attitudes and behaviors concerning technology.

4 METHOD

4.1 *Subjects and Design*

To test the impact of negative WOM, EE (effort expectancy), and PE (performance expectancy) on PIS (perceived institutional support), an experimental approach was used.

Participants were instructed to answer questions about the university by obtaining information from the university's website. A between-subjects design with three treatments (negative WOM, neutral WOM, and a control group) was developed, using university students as respondents. Each subject used his or her own university ID and password to log on to the system in a public computer lab reserved solely for this experiment.

They were told not to log on until instructed to do so. Students were recruited from an undergraduate introductory MIS class and were offered extra credit for their participation. Additional participants were recruited from introductory psychology classes, and these students were given credit toward their required experiment time. The presentation of the experiment is divided into four phases: 1) preparation, 2) treatment, 3) performance, and 4) measurement.

4.2 *Experimental Procedures*

Before the subjects logged on, they were instructed not to use the computer for any other activities but the experimental tasks, and were told that doing other activities would disqualify them from the experiment and they would forfeit their incentive. When all students were seated at their workstations, with their instructions and task booklets, the subjects were instructed to log on. Then the experiment moderator read the following two paragraphs aloud.

> "Welcome to the website utilization study. Please turn off all cell phones, pagers, PDAs and mobile devices at this time. During the next 45 minutes you will be asked to visit a website and to retrieve certain information. This information will be used to answer questions in your booklet. During this time we ask that you do not talk with anyone, and we ask that you work independently of your neighbor. You must follow all instructions. Failure to do so could disqualify you from the study and you will lose your incentive."

During phase 2 the participants were given the appropriate experimental treatment (either neutral WOM or negative WOM). No treatment was given for the control group.

WOM was manipulated through use of a simulated electronic bulletin board. Comments that were said to come from University of Pittsburgh students were created and placed on a static webpage. Students were told that these were actual comments from their student peers. The participants were instructed to open two sessions of Internet Explorer. One session was directed to the University of Pittsburgh's home page and the other to the treatment page. The following paragraph was read aloud.

> "The university research group has evaluated university websites world-wide. We asked students such as you to give feedback on The University of Pittsburgh's website. We randomly chose some of their comments from the electronic bulletin board, and placed them on a web page for you to view. Go to the web page and read the comments. Once you have read the comments, return to this hand-out. Proceed to the following webpage: _____."

Participants were initially given 3 minutes to read the comments. The web page remained open during the experiment. Participants were welcome to refer back to the comments through phase 3 (see Appendices 2 and 3).

The participants were instructed to answer questions about the University of Pittsburgh (see Appendix #4). The questions were on page 2 of the booklet, and the participants were instructed to find the answers to these questions using only the university's webpage, related Pitt sites, and the university's on-line library databases. To standardize the type of information that participants accessed during the experimental session, they were instructed that Google and other search engines must not be used in order to standardize the types of information that participants can access during an experimental session.

They were advised to write the answers in the booklet in the space provided next to the questions. The questions to be answered by the subjects covered four categories which are representative of the information that can be retrieved through any university's website,

such as the type of information that students may need while on the campus. The categories of questions were sports-related, academic- related, general student body questions, and research questions (See Appendix 4 for specific questions). The questions were designed to require students to consult various parts of the university website. The students were given 20 minutes to complete the task. Upon completion they were asked to complete the remainder of the booklet, which led to phase 4.

In phase 4 of the experiment participants used the remainder of the time (25 minutes) to complete the questionnaire. This was expected to be ample time, because pre-test subjects only needed about 15 minutes to complete this task. Once phase 4 was completed, the experiment was finished and the individual was free to leave after submitting the booklet and reading a feedback sheet that explained the purpose of the study.

4.3 *MEASURES*

4.3.1 Independent Variables

Performance expectancy (PE) is defined as the degree to which an individual believes that using the system will enhance his or her performance or ability to attain a work-related goal. This is measured with a 4-item, Likert scale developed by Venkatesh et al. (2003), who report a reliability of $\alpha = .92$ for this scale (see Appendix 5 for items). This measure's scale ranges from 1-7, with 1 indicating strong disagreement with the statements (low PE), and 7 indicating high levels of PE.

Effort expectancy (EE) was also developed by Venkatesh et al. (2003). Effort expectancy is defined as the degree of ease associated with the use of the system. This is also a 4-item seven-point Likert scale. Venkatesh et al. (2003) report a reliability of $\alpha = .90$ for

this scale that ranges from 1-7, with 1 indicating low levels of EE, and 7 indicating high levels of EE.

Negative WOM is a manipulated variable represented by either negative or neutral comments on the electronic bulletin board to which subjects are exposed during the treatment phase. There are two manipulation check questions. The first asked if the comments have been read, and the second asked about the valence of the WOM. These will be described more fully below.

Perceived institutional support (PIS) was initially developed by LaMastro (2001). She developed her scale by modifying the perceived organizational support scale to fit the university context. PIS is defined as the individual's perception that a relevant institution values his or her contribution and cares about his or her well-being. Like LaMastro, this study included the proper name of the university in the measures where appropriate (See Appendix 5). PIS is an 8-item Likert scale with possible responses ranging from 1, indicating low perceived support through 7, indicating high perceived support (with items 3 and 6 reverse coded). LaMastro (2001) reported a reliability of $\alpha = .71$ for this scale. However, other perceived support studies use the 8-item short form to capture POS and report higher reliability for such items (see Eisenberger et al., 1997). This dissertation uses the short form (the 8-item scale) and adapts the wording for the institutional context as outlined by LaMastro (2001).

4.3.2 Dependent Variable

LaMastro (2001) examined three OCB intentions that are important to the university context. These include the likelihood of attending the present university if a graduate program of interest were offered; the likelihood of providing financial support to the

university as an alumnus, and the likelihood of becoming active in the alumni organization. Not only are these behaviors non-mandatory, but they would also benefit the institution; therefore, these behaviors fit the concept of citizenship behavior. When LaMastro measured these OCBs they were single-item scales, and no reliability statistics are available. This dissertation enhances the OCB scales and uses a two-item, 7-point Likert scale for each OCB item.

4.3.3 Demographics and Control Variables

Other variables are collected to be used in secondary data analysis. One prominent item that is relevant to the current study is computer efficacy (Compeau and Higgins, 1995). Computer efficacy is defined as an individual's belief about his or her ability to use computers competently. This is a ten-item Likert scale with possible responses ranging from 1 – 7. A response of 1 exhibits no confidence in the respondent's ability to use technology (low computer efficacy), while 7 means that the subject is quite confident. This variable is included as a potential control factor for different levels of knowledge or competency in using technology which may impact subjects' ability to locate and navigate through the website during the experimental treatment phase.

Demographic variables are also collected, including gender, age, ethnicity, major, and country of origin. Gender is a variable that may have an impact on the findings. Prior research suggests that men and women have different reactions to technology (Venkatesh and Morris, 2002). Thus, gender is an additional control variable that will be explored in secondary analysis for this dissertation.

4.4 *RESULTS FROM PILOT STUDY*

4.5 *Demographics*

Participants for the pilot study were 42 university students, the vast majority of whom were enrolled in the undergraduate management information systems course that all business majors must take. The students were assigned extra credit for participating, and they were told that they must be engaged in the experiment and answer the questions as honestly as possible in order to receive the extra credit. Out of the 42 participants, the majority were female, white and between the ages of 18-24. A profile of demographic information is provided in Table 1.

The participants were randomly assigned to one of three experiment conditions; the treatments were negative WOM (n=13), neutral WOM (n=14) and the control group (n=15). As stated earlier, WOM was manipulated by showing the participants a static bulletin board containing comments about the website from other students. The control group did not view the bulletin board.

Table 1 -- Demographics for Pilot Sample

	Negative WOM	Neutral WOM	Control Group	Total
N	13 (31.7%)	14 (33.3%)	15 (36.6%)	42
Gender				
Male	2 (15.4%)	6 (42.9%)	7 (46.7%)	15 (35.7%)
Female	11 (84.6%)	8 (57.1%)	8 (53.3%)	27 (64.3%)
Age				
18-24	13 (100.0%)	13 (92.9%)	15(100%)	41 (97.6%)
40-50	-	1 (7.1%)	-	1 (2.4%)
Ethnicity				
AA/Black American	3 (23.1%)	4 (28.6%)	2 (13.3%)	9 (21.4%)
Caucasian/White American	10 (76.9%)	8 (57.1%)	9 (60.0%)	27 (64.3%)
Asian American	-	-	1 (06.7%)	1 (2.4%)
American Multi-Ethnic	-	2 (14.3%)	-	2 (4.8%)
Asian/Pacific Islander	-	-	1 (06.7%)	1 (2.4%)
Caucasian International	-	-	2 (13.3%)	2 (4.8%)
Country of Origin				
US born	13 (100%)	14 (100%)	11 (73.3%)	38 (90.5%)
Non US born	-	-	4 (26.7%)	4 (9.5%)

4.6 *Experimental Treatment Randomization Manipulation Checks and Secondary Analysis*

4.6.1 Randomization Check

In this study, subjects were randomly assigned to one of three treatment groups. When participants signed up for an experiment time slot, they were not aware of any details of the experiment and they were not aware which treatment was going to be administered. This study will use gender to examine the randomness of the distribution of subjects to treatment conditions.

Out of the 42 subjects, 15 were male (35.7%) and 27 (64.3%) were female. The 42 participants were dispersed among 3 treatments in the following manner: 13 subjects were assigned to groups with the negative WOM treatment, 14 to the neutral WOM treatment, and 15 to the control group. For the negative WOM treatment, two of three conditions appeared to be gender-balanced, as shown in Table 2. While the negative WOM condition did not appear to be gender-balanced, the other two appeared more balanced. Chi-Square statistics revealed that the possible imbalance is not significant, and random assignment of treatment to each gender is not rejected.

Table 2 -- Gender Breakdown by Treatment

	Gender		Total
	Female	Male	
Negative WOM	11	2	13
Neutral WOM	8	6	14
Control Group	8	7	15
Total	27	15	42
Total Expected	27	15	42
Pearson Chi-square (Df)	3.435 (1)	Sig (2-tailed)	.180

4.6.2 Manipulation Checks

There were two manipulation checks. The first check was a "yes" or "no" question which asked whether or not the WOM comments were read. This was administered in the response questionnaire to the neutral and negative WOM treatments. All participants of the negative WOM and neutral WOM treatment groups checked yes. Therefore, no surveys needed to be discarded at this point. If a participant checked no, the survey would have been discarded.

However, to determine the effectiveness of the valence of the WOM comments, a 3-item Likert scale was used to ask the participants how negatively or positively they perceived the remarks/comments that were placed on an electronic bulletin board. The reliability of the 3-item negative WOM manipulation check yielded α= .749. The items are available in Appendix 5 and below Table 3.

An independent samples t- test was also performed between the negative and neutral WOM samples, with the results showing that the difference between the means of the two treatment groups were significant (t= 7.692 p= .000, df= 24). The ratings within the negative WOM treatment group were significantly different and more negative than for the neutral WOM treatment group. Thus, the manipulation of negative WOM was validated. These results are summarized in Table 3

Table 3 --T-Test for WOM Treatment Groups

Treatment	N	Mean	Std. Deviation	Std Error Mean
Negative WOM	12	2.5000	.47673	001
Neutral WOM	14	5.1786	1.11988	.022

T=7.692 p= .000

Note: Item "Consider the user reactions to The University of Pittsburgh's website that you read:"

Q1: How would you categorize those comments 1 (strongly negative) – 7 (strongly positive)
Q2: The user reactions were very negative (R) 1 (strongly disagree) - 7 (strongly agree)
Q3: The user reactions I read were very positive 1 (strongly disagree) - 7 (strongly agree)

4.6.3 Secondary Analysis: Web Experience and Computer Efficacy

As a further test of the validity of the experimental treatment, data were analyzed to ensure that relevant technical skills among participants were randomly distributed across treatment groups. An Analysis of Variance (ANOVA) was performed to examine the

differences between treatment groups with regard to computer efficacy and web experience. There were no statistically significant differences in treatment conditions regarding computer efficacy (F=1.337, p=.332, df= 2) and web experience (F=.531, p=.592, df= 2).

4.7 *Correlations and Reliability Analyses*

Correlations and reliability coefficients are also reported in Table 4. This includes the independent variables, dependent variables and variables used for secondary analysis. Cronbach's Alpha is provided along the diagonal.

Table 4 Correlation and Reliability

	PIS	PE	EE	OCB	COMPEFF	WEBEXP
Perceived Institutional Support (PIS)	(.829)	- - - -	- - - -	- - - -	- - - -	- - - -
Performance Expectancy (PE)	.502**	(.883)	- - - -	- - - -	- - - -	- - - -
Effort Expectancy (EE)	.322*	.432**	(.904)	- - - -	- - - -	- - - -
Organization Citizenship Behavior (OCB) Intentions	.587**	.360*	.468	(.843)	- - - -	- - - -
Computer Efficacy (COMPEFF)	-.082	.046	.222	-.113	(.865)	- - - -
Web Experience (WEBEXP)	-.150	-.067	.168	.072	.107	(.748)

Note: N=42; Cronbach's alpha on the diagonal; * = p< .05, **= p< .01; two tailed test

4.7.1 Effort Expectancy

Effort expectancy (EE) measures the degree of ease associated with using a technology. EE is measured using a 4-item Likert scale and yielded a reliability of α= .904, in line with the authors of this scale (Venkatesh et al., 2003). The reliability analysis of the scale items is shown in Table 5.

Table 5 -- Reliability Analysis -- Effort Expectancy (EE)

Statistics for SCALE	Mean 17.98	Variance 23.292	Std Deviation 4.826	N of Variables 4
	Scale Mean if Item Deleted	Scale Variance If Item Deleted	Item-Total Correlation	Alpha if Item Deleted
EE1	13.33	14.033	.844	.859
EE2	13.21	13.148	.783	.877
EE3	13.93	14.312	.653	.923
EE4	13.45	12.595	.878	.840

4.7.2 Performance Expectancy

Performance expectancy (PE) was measured using a 4-item scale from Venkatesh et al. (2003). These items measure the perceived usefulness of technology or the belief that using this technology will bring about gains when accomplishing a task. Reliability with all 4 items is α =.883. This is slightly below the Venkatesh et al. reliability, but well above acceptable standards. The reliability analysis is shown in Table 6.

Table 6 -- Reliability Analysis -- Performance Expectancy (PE)

Statistics for SCALE	Mean 15.45	Variance 22.985	Std Deviation 4.794	N of Variables 4
	Scale Mean if Item Deleted	Scale Variance If item Deleted	Item-Total Correlation	Alpha if Item Deleted
PE1	11.00	13.366	.734	.855
PE2	11.55	10.937	.892	.789
PE3	11.81	13.670	.807	.830
PE4	12.00	15.756	.583	.906

4.7.3 Perceived Institutional Support (PIS)

PIS was measured using an 8-item scale adapted from the short form of perceived organizational support (Eisenberger et al., 1997). In prior research, LaMastro (2001) also modified POS scales for a university environment, thus measuring PIS. The construct is measured by an 8-item 7-point Likert scale with items 3 and 6 reverse-coded (see Appendix #5). Cronbach's alpha yielded α =.829, well above LaMastro's reported reliability of α = .71. The reliability analysis for the scale items is shown in Table 7.

Table 7 -- Reliability Analysis -- Perceived Institutional Support (PIS)

Statistics for SCALE	Mean 32.7143	Variance 42.014	Std Deviation 6.48182	N of Variables 8
	Scale Mean if Item Deleted	Scale Variance If Item Deleted	Item-Total Correlation	Alpha if Item Deleted
PIS1	28.5476	33.961	.597	.805
PIS2	28.7381	32.979	.579	.805
PIS3 (R)	28.5476	31.083	.622	.799
PIS4	28.8810	34.546	.669	.792
PIS5	28.6905	29.634	.669	.792
PIS6 (R)	29.0238	33.780	.525	.812
PIS7	27.6190	34.290	.444	.823
PIS8	28.9524	33.64	.556	.808

4.7.4 Organizational Citizenship Behavioral (OCB) Intentions

OCB intentions were measured with a 6-item scale adapted from LaMastro (2001). OCB intentions consist of non-obligatory favorable actions (or intent to act) toward the organization from a member. In the context of the university, LaMastro identified three OCB intentions, which included the intent to contribute financially as an alumnus, intent to participate in alumni activities, and intent to attend graduate school at the same institution.

LaMastro used a one-item scale for each intention. This study enhanced that scale and used a 2-item scale for each intention (See Appendix 5). The second item for each OCB intention is reversed coded, and each item consisted of a 7-point Likert scale. Initial reliability analysis yielded a Cronbach's alpha of α=.75. However, when deleting the graduate school intentions OCB, analysis yielded a Cronbach's alpha of α=.843. The reliability analysis of the scale items, after dropping the graduate school intentions item, is reported in Table 8.

Table 8 -- Reliability Analysis -- Organizational Citizenship Behavior Intentions

Statistics for SCALE	Mean 15.45	Variance 22.985	Std Deviation 4.794	N of Variables 4
	Scale Mean if Item Deleted	Scale Variance If Item Deleted	Item-Total Correlation	Alpha if Item Deleted
OCBFIN1	11.6429	13.406	.870	.696
OCBFIN2 (R)	11.5476	14.595	.628	.815
OCBALUM1	11.3095	15.536	.701	.778
OCBALUM2 (R)	11.0714	17.044	.502	.859

4.7.5 Web Experience

A measure of web experience was taken from Everard (2003) and Jones (2003). This is an 11-item scale used in those studies to examine random assignment of subjects or to look for a covariate of experience. Web experience yielded a Cronbach's alpha of .α= .748. The reliability analysis for the scale is reported in Table 9.

Table 9 -- Reliability Analysis -- Web Experience

Statistics for SCALE	Mean 64.11	Variance 98.564	Std Deviation 9.928	N of Variables 11
	Scale Mean if Item Deleted	Scale Variance If Item Deleted	Item-Total Correlation	Alpha if Item Deleted
WEBEXP1	57.58	80.978	.683	.702
WEBEXP2	57.57	88.097	.509	.726
WEBEXP3	57.40	84.167	.609	.713
WEBEXP4	57.64	81.311	.740	.700
WEBEXP5	60.08	83.725	.167	.784
WEBEXP6	59.40	72.936	.558	.704
WEBEXP7	57.74	94.813	.161	.752
WEBEXP8	58.60	82.052	.249	.762
WEBEXP9	58.08	90.263	.254	.745
WEBEXP10	59.26	77.198	.486	.716
WEBEXP11	57.79	83.052	.526	.716

4.7.6 Computer Efficacy

Computer efficacy (Compeau and Higgins, 1995) is also used in secondary analysis. It measures how much confidence one has when using technology, and is a 10-item scale (Compeau and Higgins, 1995). Computer efficacy yielded a score of .865 for Cronbach's alpha, and the reliability analysis for this scale is found in Table 10.

Table 10 -- Reliability Analysis -- Computer Efficacy

Statistics for SCALE	Mean 54.12	Variance 67.425	Std Deviation 8.211	N of Variables 10
	Scale Mean if Item Deleted	Scale Variance If Item Deleted	Item-Total Correlation	Alpha if Item Deleted
COMPEF1	49.88	48.937	.788	.832
COMPEF2	50.40	49.564	.748	.836
COMPEF3	49.19	49.036	.690	.844
COMPEF4	48.64	53.699	.593	.851
COMPEF5	48.19	57.036	.710	.846
COMPEF6	47.90	59.259	.658	.852
COMPEF7	48.52	55.475	.506	.859
COMPEF8	48.93	56.214	.465	.863
COMPEF9	47.62	63.412	.333	.868
COMPEF10	47.79	61.685	.436	.863

4.8 *Data Analysis and Results*

4.8.1 Main Effect

In terms of experimental treatments, the focus of this dissertation is the impact of negative WOM. Consequently, the differences between neutral WOM and the control group are not relevant to the test of hypotheses in this dissertation. In order to collapse across these two conditions, an independent samples means test was performed on the outcome measures to ensure that there was no statistically significant difference between the random treatment groups. Results confirmed that for PIS ($t = -.337$, $p>.10$) and OCB ($t= -1.15$, $p>.10$), there was no significant difference between the control group and the neutral WOM treatment group. Thus, subjects in these two groups were combined for all subsequent analyses.

Hierarchical multiple linear regression was used to test Hypotheses 1-4. Hypotheses H1a and H1b state that performance expectancy (PE) and effort expectancy (EE) will predict perceived institutional support (PIS). The regression of the mean of perceived institutional support (PIS) on the means of predictor variables PE and EE showed that the overall model

was significant (F= 4.721, p=.007, df= 3; see Table 11) and explained 27.2% of the variance in PIS. The regression model also shows that PE is significant in influencing PIS (β= .446, t= 2.903, p= .006), but that EE is not significant in influencing PIS (β=.127, t-.827, p= .413) as shown in step 1 of Table 11.

Table 11 -- Results of Regression Analysis for Perceived Institutional Support (PIS)

	B	SE	β
Step 1 (Ho 1a & 1b)			
Performance Expectancy	.293	.101	.446**
Effort Expectancy	.078	.094	.127
WOM Treatment	-.145	.253	-.079
R^2= .272			
F= 4,721 p=.007** df= 3			
Step 2 (Ho: 2a & 2b)			
Performance Expectancy	.277	.117	.421*
Effort Expectancy	.116	.117	.189
WOM Treatment	-.329	1.229	.180
PE x WOM Treatment	.017	.271	.037
EE x WOM Treatment	-.124	.208	-.311
ΔR^2 =.007 R^2=.279			
F=2.782 p=.032* df= 5			

Note: N= 42. *p<.05; ** = p< .01

4.8.2 Moderation Analysis for Negative WOM Treatment

Regression analysis was used to determine the moderating impact of negative WOM (Hypotheses 2a and 2b). To test the moderating effects using regression analysis, the product term of each independent variable, and the moderating variable were calculated. The

first step of the regression model contained the independent variables PE, EE, and the WOM treatment variable (the moderator). The product or interaction terms were entered into the second step of the regression model. The overall model for step two was significant with F= 2.782 p= .032 df= 5. However, no significance was found in any of the interaction terms that were calculated, and Δr^2 was not significant. The results are presented in step 2 of Table 11

4.8.3 Perceived Institutional Support (PIS) and Organizational Citizenship Behavior (OCB) Intentions

Regression analysis was also used to determine the influence of perceived institutional support on organizational citizenship behavioral (OCB) intentions (H3). PIS was a significant predictor (F= 21.053, p= .000, df= 1), and explained 34.5% of the variance of OCB intentions. These results are shown in equation II of Table 12.

4.8.4 Mediation Analysis for PIS

A test of mediation was performed to determine if PIS mediates the relationship between PE, EE and OCB intentions. Mediation was tested according to Kenny et al. (1998), and involved several steps of regression analysis. The first step involved testing the impact of the independent variables PE and EE on the mediator, PIS. Regression analysis showed that EE does not predict PIS. Therefore, EE was eliminated from subsequent mediation analyses. As shown in equation I of Table 11, the impact of PE on PIS was significant. The second step was to test the impact of the mediator, PIS, on the outcome variable, OCB intentions. The impact of PIS on OCB intentions was significant (see equation II of Table 12). The third step was to demonstrate the impact of the independent variable, PE, on

the outcome variable OCB intentions. As shown in equation III of Table 12, the influence of the independent variable performance expectancy (PE) on OCB intentions was significant (β= .360, t=2.443, p= .019). To substantiate the mediation effect of PIS, the significance of the independent variable, PE, should no longer be significant with the mediator in the regression equation. When regressing OCB on PE and PIS, the mediator PIS was significant, but not PE. The regression model explains 31.7% of the variance on OCB (r^2 = .317). See equation IV step 2 of Table 12 (PE β= .088, p= .559; PIS β= .543, p= .001).

Table 12 – Regression: OCB on PIS and Mediator

Variables Entered	B	SE	β
Equation I; PIS			
Performance Expectancy	.388	.168	.382**
Effort Expectancy	-.047	.156	-.050
	.		
Equation II: OCB			
PIS	.907	.198	.587***
F= 21.053 p= .000, r^2 =.345 df= 1			
Equation III: OCB			
Performance Expectancy	.366	.150	.360*
F= 5.966 p= .019, df= 1			
r^2=.108			
Equation IV: OCB			
Step 1:	.366	.150	.360*
Performance Expectancy			
F= 5.966 P=.019, df= 1			
r^2 = .108			
Step 2:			
Performance Expectancy	.089	.152	.088
PIS	.839	.230	.543**
F= 10.528 p= .000, df=2, r^2=.317, Δr^2=.209**			

Note. N= 42. *p<.05; ** = p< .01; ***=p<.001; all r^2 values are adjusted

According to Baron and Kenny (1986), the results of the regression analysis meet the criteria revealing that PIS fully mediates the relationship between performance expectancy and OCB intentions.

4.8.5 Control Variable Secondary Analysis

Web experience is an important control variable that has been used in experiments using web interfaces (Everard, 2003; Jones 2003). Controlling for web experience in the regression analysis equation did not produce any significant effects across the analyses reported herein. Thus, the impact of PE (significant) and EE (not significant) on PIS did not change as a function of web experience. The same is true for computer efficacy. The impact of PE was still significant and the impact of EE on PIS was still insignificant.

4.8.6 Summary of Pilot Findings

Table 13 presents a summary of the Hypotheses and the indication of support based on the pilot data.

Table 13 -- Summary of Findings

H1a	Judgments of PE will predict PIS	Supported
H1b	Judgments of EE will predict PIS	Not supported
H2a	Negative WOM will negatively moderate PE and PIS	Not supported
H2b	Negative WOM will negatively moderate EE and PIS	Not supported
H3	PIS will predict level of OCB intentions	Supported
H4a	PIS mediates the relationship of PE on OCB	Supported
H4b	PIS mediates the relationship of EE on OCB	Not supported

4.8.7 Implications for Main Study

An important observation for the pilot study is the negative word-of-mouth manipulation. The word-of-mouth manipulation check was statistically significant;

therefore, no adjustments are required for the main study. However, the moderating effect of negative WOM was not significant with a small number of subjects. If these results do not change for the entire sample, additional explanations will need to be explored.

5 MAIN DATA ANALYSIS

This section presents the statistical analysis for the entire study. The data analysis was conducted using two main approaches, multiple regression and structural equation modeling (SEM) using partial least squares (PLS). Multiple regression is considered to be a first generation data analysis technique, while SEM is considered second generation (Gefen et al., 2000; Chin, 1998; Fornell, 1987). SEM permits complicated variable relationships and is a more complete picture of the entire model (Gefen et al., 2000; Bullock et al., 1994, Hanushek and Jackson, 1977). For this study, multiple regression will be used to test the hypotheses of the study. SEM using PLS will be used to assess the overall structure of the model. The next section will include demographics of the participants, manipulation checks, reliability and correlation analysis, and statistical testing of the hypotheses using 1st generation analysis multiple regression. This will be followed by analysis using 2nd generation PLS.

5.1 *Main Study Sample Demographics*

Participants of the study were 164 university students, the vast majority of whom were undergraduate students between the ages of 18 and 24. There were slightly more females than males, 51.8% and 48.2% respectively, and a majority of them (75.5%) identified themselves as white. In terms of nationality, just over 90% of the participants were born in the US. The vast majority of students came from an undergraduate MIS course (90%), and the balance were either students from an undergraduate psychology course or other volunteers. The MIS students were given extra credit for their participation. Psychology

students received course credit for their participation. The rest of the students were volunteers who participated for a $10 incentive.

The participants were randomly assigned to one of three experimental treatments: negative WOM (n=63), neutral WOM (n=63) and the control group (n=38). As in the pilot study, WOM was manipulated by showing the participants a static bulletin board containing comments about the website from other students. The control group did not view the bulletin board. The demographics are reported in Table 15.

5.1.1 Randomization Check

As in the pilot study, the data will be examined to determine randomization across the three treatment groups in terms of gender. On the surface, the numbers appear to be balanced. There were a total of 85 (51.8%) women and 79 (48.2%) men in the study. The distribution of gender across treatment groups is reported in Table 14. Chi-squared results yield a value of .742 with a significance of .690. Therefore, the treatment groups appear to be randomized in terms of gender. Crosstabs were run for computer self-efficacy and web experience to determine equal distribution across treatment groups. In both cases, the chi-square values were not significant.

Table 14 -- Gender Randomization Check

	Gender		Total
	Female	Male	
Negative WOM	34	29	63
Neutral WOM	21	17	38
Control Group	30	33	63
Total	85	79	164
Total Expected	85	79	164
Pearson Chi-square (Df)	.742 (1)	Sig (2-sided)	.690

5.2 *Experimental Treatment Manipulation Checks*

The manipulation checks were handled in the same manner as in the pilot study. For the negative and neutral WOM treatment groups, the participants were asked if they read the WOM comments on the bulletin board with a simple yes or no question. If a participant would have responded negatively, then the questionnaire would have been discarded. All of the participants in these two treatment groups responded in the affirmative However, to determine the effectiveness of the valence of the WOM comments, a 3-item Likert scale was used to ask the participants how they perceived the remarks/comments that were placed on an electronic bulletin board. The reliability for the 3-item perceived WOM manipulation check yielded a Cronbach's alpha (standardized item alpha) of $\alpha = .858$.

Table 15 -- Demographics for Main Study

	Negative WOM	Neutral WOM	Control Group	Total
N	63 (38.4%)	38 (23.2%)	63 (38.4%)	164
Gender				
Male	29 (46.0%)	17 (44.7%)	33 (52.4%)	79(48.2%)
Female	34 (54.0%)	21(55.3%)	30 (47.6%)	85(51.8%)
Age				
18-24	59 (93.7%)	36 (94.7%)	61(96.8%)	156 (95.1%)
25-30	2 (3.2%)	-	1 (1.6%)	3 (1.8%)
30-40	-	1 (2.6%)	-	1 (0.6%)
40-50	2 (3.2%)	1 (2.6%)	1 (1.6%)	4 (2.4%)
Ethnicity*				
AA/Black American	6 (9.7%)	8 (21.1%)	6 (9.5%)	20 (12.3%)
Caucasian/White American	48 (77.4%)	26 (68.4%)	49 (77.8%)	123(75.5%)
Hispanic/Latin American	-	-	1 (1.6%)	1 (0.6%)
Asian American	3 (4.8%)	-	3 (4.8%)	6 (3.7%)
American Multi-Ethnic	1 (1.6%)	-	2 (3.2%)	3 (1.8%)
Asian/Pacific Islander	1 (1.6%)	2 (14.3%)	-	3 (1.8%)
Caucasian International	-	-	2 (3.2%)	2 (1.2%)
Black/African Int'l	3 (4.8%)	2 (5.3%)	-	5 (3.1%)
Country of Origin				
US born	57 (91.9%)	34 (91.9%)	54 (85.7%)	145 (89.5%)
Non US born	5 (8.1%)	3 (8.1%)	9 (14.3%)	17 (10.5%)
Classification**				
Undergraduate	61 (98.3%)	36 (94.7%)	62 (98.4%)	159 (97.5%)
Graduate/Professional	1 (1.6%)	2 (5.3%)	-	3 (1.8%)
Other	-	-	1 (1.6%)	1 (0.6%)

*1 respondent in the Negative WOM treatment did not respond to the ethnicity question.

** 1 respondent in the Negative WOM treatment did not respond to the classification question.

Rounding may have caused some percentage totals to be slightly over or under 100%

An independent samples t- test was also performed between the negative and neutral WOM samples, with the results showing that the differences between the means of the two treatment groups were significant (t= 7.60 p= .05, df= 99). The ratings within the negative WOM treatment group were significantly different and more negative than for the neutral WOM treatment group. Thus, the manipulation of negative WOM was validated. These results are summarized in .Table 16

Table 16 -- Test for WOM Treatment Groups

Treatment	N	Mean	Std. Deviation	Std Error Mean
Negative WOM	63	2.88	.1.38	.173
Neutral WOM	38	5.21	1.64	.267

T= -7.60 p= .05

Note: Item "Consider the user reactions to The University of Pittsburgh's website that you read:"

Q1: How would you categorize those comments	1 (strongly negative) – 7 (strongly positive)
Q2: The user reactions were very negative (R)	1 (strongly disagree) - 7 (strongly agree)
Q3: The user reactions I read were very positive	1 (strongly disagree) - 7 (strongly agree)

As a further test of the validity of the experimental treatment, data were analyzed to insure that relevant technical skills/characteristics among participants were randomly distributed across treatment groups. An Analysis of Variance (ANOVA) was performed to examine the differences between treatment groups with regard to computer self-efficacy and web experience. There were no statistically significant differences in treatment conditions regarding computer self-efficacy (F=.626, p=.536, df=2) and web experience (F=.537, p=.586, df =2).

5.3 *Correlation and Reliability Analyses*

Correlations and reliability coefficients are reported in Table 17. This includes the independent and dependent variables and variables used for secondary analysis. These scales were taken from prior research and adhere to sound psychometric properties. This study reports all reliabilities using Cronbach's alpha (standardized item alpha) listed along the diagonal.

Table 17 -- Correlation and Reliability

	PIS	PE	EE	OCB	COMPEFF	WEBEXP
Perceived Institutional Support (PIS)	(.853)	- - - -	- - - -	- - - -	- - - -	- - - -
Performance Expectancy (PE)	.402**	(.905)	- - - -	- - - -	- - - -	- - - -
Effort Expectancy (EE)	.280*	.451**	(.927)	- - - -	- - - -	- - - -
Organization Citizenship Behavior (OCB) Intentions	.460**	.303*	.269**	(.893)	- - - -	- - - -
Computer Efficacy (COMPEFF)	-.010	.043	.297**	.025	(.890)	- - - -
Web Experience (WEBEXP)	-.135	.119	.231**	.098	.095	(.790)

Note: N=164; Cronbach's alpha (standardized alpha is on the diagonal; * = p< .05, **= p< .01; two-tailed test)

5.3.1 Effort Expectancy

Effort expectancy (EE) measures the degree of ease associated with using a technology. As stated earlier, EE is a construct that has evolved from the perceived ease of use construct (Davis, 1989; Davis et al., 1989; Venkatesh et al., 2003; Venkatesh and Davis, 2000), EE is measured using a 4-item Likert scale and yielded a reliability of $\alpha = .927$, in line

with the authors of this scale (Venkatesh et al., 2003). The reliability analysis of the scale items is shown in Table 19

Table 18 -- Reliability Analysis -- Effort Expectancy (EE)

Statistics for SCALE	Mean 18.0	Variance 29.523	Std Deviation 5.434	N of Variables 4
	Scale Mean if Item Deleted	Scale Variance If Item Deleted	Item-Total Correlation	Alpha if Item Deleted
EE1	13.43	17.889	.815	.910
EE2	13.34	16.820	.839	.901
EE3	13.71	16.936	.785	.920
EE4	13.53	16.410	.883	.886

Performance expectancy (PE) was measured using a 4-item scale from Venkatesh et al. (2003). As stated earlier, the PE construct is a construct that has evolved from the Perceived Usefulness (PU) construct (Davis, 1989; Davis et al., 1989; Venkatesh et al., 2003; Venkatesh and Davis, 2000). These items measure the perceived usefulness of technology or the belief that using this technology will bring about gains when accomplishing a task. Reliability with all 4 items is α =.905. This is slightly below the Venkatesh et al. reliability, but well above acceptable standards. The reliability analysis is shown in Table 19.

Table 19 -- Reliability Analysis -- Performance Expectancy (PE)

Statistics for SCALE	Mean 16.31	Variance 28.018	Std Deviation 5.293	N of Variables 4
	Scale Mean if Item Deleted	Scale Variance If item Deleted	Item-Total Correlation	Alpha if Item Deleted
PE1	11.75	16.078	.661	.882
PE2	12.10	14.810	.777	.849
PE3	12.38	16.176	.719	.861
PE4	12.72	17.969	.496	.912

PIS was measured using an 8-item scale adapted from the short form of perceived organizational support (Eisenberger et al., 1997). In prior research, LaMastro (2001) also modified POS scales for a university environment, thus measuring PIS.

The construct is measured by an 8-item 7-point Likert scale with items 3 and 6 reverse coded (see Appendix #5). Cronbach's alpha yielded α =.853, well above LaMastro's reported reliability of α = .71. The reliability analysis for the scale items is shown in Table 20.

Table 20 -- Reliability Analysis -- Perceived Institutional Support (PIS)

Statistics for SCALE	Mean 34.7853	Variance 56.688	Std Deviation 7.52916	N of Variables 8
	Scale Mean if Item Deleted	Scale Variance If Item Deleted	Item-Total Correlation	Alpha if Item Deleted
PIS1	30.4908	43.424	.692	.823
PIS2	30.5337	41.633	.757	.814
PIS3 (R)	30.3006	41.162	.713	.818
PIS4	30.7178	48.463	.443	.850
PIS5	30.6258	44.532	.592	.834
PIS6 (R)	30.4601	45.447	.433	.856
PIS7	29.4969	46.190	.501	.845
PIS8	30.8712	43.706	.629	.830

OCB intentions were measured with a 4-item scale adapted from LaMastro (2001). OCB intentions consist of non-obligatory favorable actions (or intent to act) toward the organization from a member. Based on pilot study results, intent to attend graduate school at the same institution was dropped from the scale. The reliability analysis for OCB intentions yielded a Cronbach's alpha of α=.893. The reliability analysis of the scale items is reported in Table 21.

Table 21 -- Reliability Analysis -- Organizational Citizenship Behavior Intentions

Statistics for SCALE	Mean 15.0854	Variance 32.827	Std Deviation 5.72949	N of Variables 4
	Scale Mean if Item Deleted	Scale Variance If Item Deleted	Item-Total Correlation	Alpha if Item Deleted
OCBFIN1	11.5183	18.951	.789	.852
OCBFIN2 (R)	11.4573	18.900	.760	.863
OCBALUM1	11.2317	19.639	.759	.864
OCBALUM2 (R)	11.0488	19.016	.745	.868

A measure of web experience was taken from Everard (2003) and Jones (2003). This is an 11-item scale used in those studies to examine random assignment of subjects or to look for a covariance of experience. Web experience yielded a Cronbach's alpha of .α= .790. The reliability analysis for the scale is reported in Table 22.

Table 22 -- Reliability Analysis -- Web Experience

Statistics for SCALE	Mean 64.91	Variance 82.158	Std Deviation 9.064	N of Variables 11
	Scale Mean if Item Deleted	Scale Variance If Item Deleted	Item-Total Correlation	Alpha if Item Deleted
WEBEXP1	58.24	72.047	.532	.688
WEBEXP2	58.31	73.449	.478	.695
WEBEXP3	58.13	74.562	.479	.698
WEBEXP4	58.38	70.941	.580	.683
WEBEXP5	60.42	64.430	.288	.728
WEBEXP6	59.96	59.375	.572	.661
WEBEXP7	58.56	76.890	.240	.715
WEBEXP8	59.41	66.330	.281	.724
WEBEXP9	59.06	69.781	.348	.702
WEBEXP10	60.13	67.323	.341	.705
WEBEXP11	58.49	72.733	.427	.696

Computer self-efficacy (Compeau and Higgins, 1995) is also used in secondary analysis. It measures how much confidence one has when using technology, and is a 10-item scale (Compeau and Higgins, 1995).

Computer self-efficacy yielded a score of .890 for Cronbach's alpha and the reliability analysis for this scale is found in Table 23.

Table 23 -- Reliability Analysis -- Computer Self-Efficacy

Statistics for SCALE	Mean 54.00	Variance 73.791	Std Deviation 8.590	N of Variables 10
	Scale Mean if Item Deleted	Scale Variance If Item Deleted	Item-Total Correlation	Alpha if Item Deleted
COMPEF1	49.87	54.898	.747	.864
COMPEF2	50.26	55.603	.672	.872
COMPEF3	49.05	56.542	.719	.867
COMPEF4	48.56	58.542	.706	.868
COMPEF5	48.06	62.021	.673	.872
COMPEF6	47.90	63.549	.634	.875
COMPEF7	48.21	60.586	.628	.874
COMPEF8	48.84	59.918	.546	.881
COMPEF9	47.49	67.135	.486	.884
COMPEF10	47.76	66.308	.451	.885

5.4 *Factor Analysis*

Confirmatory factor analysis was performed to ascertain convergent and discriminant validity for the constructs' perceived institutional support (PIS) and organizational citizenship behavior (OCB) intentions. These constructs are being examined with factor analysis because they are relatively new in the IS context and because they were highly correlated with each other. This additional analysis will demonstrate that these variables have discriminant and convergent validity. Factor analysis was performed using SPSS 13.0 with Varimax rotation. Varimax rotation was selected because the variables are expected to be independent (Field, 2005).

Preliminary analysis is conducted by examining the R-matrix output of the factor analysis for both the PIS and the OCB constructs. This matrix shows the Pearson correlation coefficient for all construct items in the top half of the matrix and the significance in the lower half. (See Table 24.) The lower half of the matrix shows that every item is significantly correlated with other items of its construct. When examining Table 24, the lowest correlation between items of the PIS construct is .193 from items 7 (PIS7) and 6 (RPIS 6). Although this appears low (perhaps due to the reversal of its scale), this correlation is significant with a p value of p= .007.

Table 24 -- PIS Item Correlation Matrix

		PIS1	PIS2	RPIS3	PIS4	PIS5	RPIS6	PIS7	PIS8
Correlation	PIS1	1.000	.754	.614	.278	.493	.270	.438	.519
	PIS2	.754	1.000	.702	.377	.462	.402	.452	.494
	RPIS3	.614	.702	1.000	.309	.440	.443	.428	.508
	PIS4	.278	.377	.309	1.000	.399	.263	.253	.378
	PIS5	.493	.462	.440	.399	1.000	.351	.316	.488
	RPIS6	.270	.402	.443	.263	.351	1.000	.193	.275
	PIS7	.438	.452	.428	.253	.316	.193	1.000	.458
	PIS8	.519	.494	.508	.378	.488	.275	.458	1.000
Sig. (1-tailed	PIS1		.000	.000	.000	.000	.000	.000	.000
	PIS2	.000		.000	.000	.000	.000	.000	.000
	RPIS3	.000	.000		.000	.000	.000	.000	.000
	PIS4	.000	.000	.000		.000	.000	.001	.000
	PIS5	.000	.000	.000	.000		.000	.000	.000
	RPIS6	.000	.000	.000	.000	.000		.007	.000
	PIS7	.000	.000	.000	.001	.000	.007		.000
	PIS8	.000	.000	.000	.000	.000	.000	.000	

The PIS construct was taken from LaMastro (2001) and is expected to have 1 factor. using Varimax rotation, the criterion was set to extract Eigenvalues greater than 1. For the PIS construct, factors ranged from .539 to .804 (See Table 25). As predicted, only one factor emerged with the PIS construct.

Table 25 – PIS Factor Analysis

		Component 1
PIS1	The University of Pittsburgh strongly considers my goals and values.	.804
PIS2	The University of Pittsburgh really cares about my well-being.	.848
PIS3 (R)	The University of Pittsburgh shows very little concern for me	.808
PIS4	The University of Pittsburgh would forgive an honest mistake on my part.	.545
PIS5	The University of Pittsburgh cares about my opinions as a student	.697
PIS6 (R)	If given the opportunity, The University of Pittsburgh would take advantage of me	.539
PIS7	Help is available from the University of Pittsburgh when I have a problem.	.622
PIS8	The University of Pittsburgh is willing to help me when I need a special favor.	.737
N=163	Eigenvalue =	4.022
	% of Variance Explained	61.467%

The same analysis was conducted with the OCB intention construct. First the OCB inter-item Pearson's correlation matrix is examined. It shows that item correlations are significant with the lowest correlation of .596 between items OCBFIN2 AND OCBALUM1 (See Table 26). All correlations are below the recommended .90 value (Field, 2005).

Table 26 -- OCB Intention Inter-Item Correlation Matrix

		OCBFIN1	ROCBFIN2	OCBALUM1	ROCBALM2
Correlation	OCBFIN1	1.000	.827	.655	.596
	ROCBFIN2	.827	1.000	.578	.615
	OCBALUM1	.655	.578	1.000	.784
	ROCBALM2	.596	.615	.784	1.000
Sig. (1-tailed)	OCBFIN1		.000	.000	.000
	ROCBFIN2	.000		.000	.000
	OCBALUM1	.000	.000		.000
	ROCBALM2	.000	.000	.000	

The factors for the OCB construct are reported in Table 27. The factor value range is from .859 - .886. The Eigenvalue = 3.028 and explains 75.689% of the variance.

Table 27 -- OCB Factor Analysis

		Component 1
OCBFIN1	I intend to contribute financially to the University of Pittsburgh after I graduate	.886
OCBFIN2 (R)	The likelihood of me financially contributing to The University of Pittsburgh upon graduation is not very good.	.869
OCBALUM1	I intend to be an active University of Pittsburgh alumnus after I graduate	.866
OCBALUM2	The likelihood of me being an active University of Pittsburgh alumni is not very good.	.859
N= 163	Eigenvalue =	3.028
	% of Variance =	75.689%

Finally, the last values reported for factor analysis include the rotated values for all of the major items in the scale. This analysis will give additional support for construct validity. Principal component analysis was used as the extraction technique, and Varimax used as the rotation method. As expected, the items loaded onto four factors with Eigenvalues greater than 1. These factors represent the items of the four constructs that were entered into the factor analysis. These constructs are performance expectancy (PE), effort expectancy (EE), perceived institutional support (PIS) and organizational citizenship behavioral (OCB) intentions (See Table 28).

Table 28 -- Rotated Factor Matrix (values under .4 suppressed)

Item Code	Perceived. Institutional Support (PIS)	Performance Expectancy (PE)	Effort Expectancy(EE)	Organizational Citizenship Behavior (OCB) Intentions
PE1		.826		
PE2		.879		
PE3		.880		
PE4		.769		
EE1			.881	
EE2			.902	
EE3			.792	
EE4			.898	
PIS1	.711			
PIS2	.794			
RPIS3	.757			
PIS4	.568			
PIS5	.746			
RPIS6	.566			
PIS7	.503			
PIS8	.703			
OCBALUM1				.848
ROCBALUM2				.853
OCBFIN1				.808
ROCBFIN2				.792

The data presented in the factor analysis show that the four constructs PE, EE, PIS, and OCB demonstrate properties of convergent and discriminant validity. Therefore, the measures can show that items in each construct are indeed related while distinctly measuring different concepts. The next section will present the analysis of the main effect.

5.5 *Analysis of Results*

5.5.1 Main Effect

As detailed in the description of the pilot study, there is a need to collapse across the neutral WOM and the control groups. An independent samples means test was performed on the outcome measures to ensure that there was no statistically significant difference between the random treatment groups. Results confirmed that for PIS ($t = .668$, $p>.50$) and OCB ($t= .660$, $p>.10$), there was no significant difference between the control group and the neutral WOM treatment group. Thus, subjects in these two groups were combined for all subsequent analyses. Hierarchical multiple linear regression was used to test Hypotheses 1-4. Hypotheses H1a and H1b state that performance expectancy (PE) and effort expectancy (EE) will predict perceived institutional support (PIS). The regression of the mean of perceived institutional support (PIS) on the means of predictor variables PE and EE showed that the overall model was significant ($F= 11.052$, $p=.000$, $df= 3$; see Table 29) and explained 15.6% of the variance (adjusted $r^2 = .156$) in PIS. The regression model also shows that PE is significant in positively influencing PIS ($\beta= .353$, $t= 4.226$, $p= .000$), but that EE is not significant in influencing PIS ($\beta=.068$, $t= 1.224$, $p= .223$) as shown in step 1 of Table 29**.** The statistical analysis shows that Hypothesis 1a is supported. That is, positive performance expectancies lead to positive institutional support. However, there was no main effect for the impact of effort expectancy on PIS. Hypothesis 1b was not supported.

Table 29 -- Results of Regression Analysis for Perceived Institutional Support

	B	SE	β
Step 1 (Ho 1a & 1b)			
Constant	3.072	.264	
Performance Expectancy	.241	.057	.353***
Effort Expectancy	.068	.055	.102
WOM Treatment	-.013	.141	-.007
r^2= .156			
F= 11.052 p=.000***, df= 3			
Step 2 (Ho: 2a & 2b)			
Constant	3.015	.317	
Performance Expectancy	.238	.074	.349**
Effort Expectancy	.083	.076	.124
WOM Treatment	.145	.528	.075
PE x WOM Treatment	-.002	.120	-.004
EE x WOM Treatment	-.034	.112	-.082
Δr^2 =.001 r^2=.146			
F=6.557 p=.000, df= 5			

Note: N= 164. *p<.05; ** = p< .01 ***=p<.001

5.5.2 Moderation Analysis for Negative WOM Treatment

Regression analysis was used to determine the moderating impact of negative WOM (Hypotheses 2a and 2b). To test the moderating effects using regression analysis, the product term of each independent variable and the moderating variable was calculated. The first step of the regression model contained the independent variables PE, EE, and the WOM treatment variable (the moderator). The product or interaction terms were entered into the

second step of the regression model. The overall model for step 2 was significant with F=6.577 p=.000, df= 5. However, no significance was found in any of the interaction terms that were calculated, and Δr^2 was not significant. The results are presented in step 2 of Table 29. Regression analysis was also used to determine the influence of perceived institutional support on organizational citizenship behavioral (OCB) intentions (hypothesis 3). The overall model for this predicted relationship was significant (F= 48.798, p= .000, df= 1), and explained 22.7% of the variance of OCB intentions (adjusted r^2 = .227). Furthermore, the statistical results show that PIS positively influences OCB (β=.481, t= 6.986, p= .000). These results are shown in equation II Table 30

Table 30 -- Regression Test for Mediation

Variables Entered	B	SE	β
Equation I; PIS			
Performance Expectancy	.241	.057	.353**
Effort Expectancy	-.068	.055	.102
WOM Treatment	-.013	.141	-.007
Equation II: OCB			
PIS	.729	.104	.481***
F= 48.798 p= .000, df=1, r^2 =.227			
Equation III: OCB			
Step 1			
Performance Expectancy	.285	.078	.276***
WOM Treatment	-.275	.223	-.094
F=8.202 p=000, df=2, $r^{2=}$ .081			
Step 2			
Performance Expectancy (PE)	.230	.095	.222*
WOM Treatment (WOM)	-.949	.695	-.323
PE x WOM	.172	.168	.240
F= 5.819 p= .001, df= 3, r^2=.081, Δr^2= .006	.192	.153	.268
Equation IV: OCB			
Step 1:			
Performance Expectancy (PE)	.285	.078	.276***
WOM Treatment (WOM)	-.275	.223	-.094
F= 8.202 P=.000, r^2 = .081			
Step 2:			
Performance Expectancy	. .230	095	.222*
WOM Treatment	-.949	.695	-.323
PE x WOM	.172	.168	.240
F=5.819 p=001, df= 3 $r^{2=}$.081 Δr^2= .006			
Step 3:			
Performance Expectancy	.042	.092	.040
WOM Treatment	-1.014	.633	-.345
PE x WOM	.192	.153	.268
PIS	.661	.113	.436***
F= 13.782 p= .000, df= 4 r^2=.239 Δr^2=.159***			

Note. N= 164 *p<.05; ** = p< .01; ***=p<.001
All r^2 are adjusted r^2

5.5.3 Mediation Analysis: PIS

A test of mediation was performed to determine if PIS mediates the relationship between PE, EE and OCB intentions. Mediation was tested according to Kenny et al. (1998), and involved several steps of regression analysis. The first step involved testing the impact of the independent variables PE and EE on the mediator, PIS. Regression analysis showed that EE does not predict PIS. Therefore, EE was eliminated from subsequent mediation analyses. As shown in equation I of Table 30, the impact of PE on PIS was significant. The second step was to test the impact of the mediator, PIS, on the outcome variable, OCB intentions. The impact of PIS on OCB intentions was significant (see equation II of Table 30). The third step was to demonstrate the impact of the independent variable, PE, on the outcome variable OCB intentions. Because the model predicts that WOM moderates the impact of PE on PE outcomes (e.g., OCB), two regression steps are executed. The first step involves regressing OCB over PE and the WOM treatment. The product term of PE and WOM is entered into the second step of the regression equation. The results of these steps will demonstrate whether or not the influence of PE, as moderated by negative WOM, on OCB is significant. As shown in step 2 of equation III of Table 30, the influence of the independent variable performance expectancy (PE) on OCB intentions was significant (β= .222, t=2.418 p= .017). To complete the mediation analysis, the impact of the independent variable, PE, on outcome variable OCB must be tested with the mediator variable PIS in the regression equation. The impact of PE should no longer be significant with the mediator PIS in the regression equation. When regressing OCB on PE and PIS, the mediator PIS was significant,

but not PE. The regression model explains 23.9% of the variance on OCB (adjusted r^2 = .239). See equation IV step 3 of Table 30 (PE β= .040, p= .559; PIS β= .436, p= .001).

5.5.4 Multicollinearity and Multiple Regression

Multicollinearity in multiple regression is a condition that occurs when two or more independent variables are very highly correlated. This high correlation violates the assumption that the independent variables are indeed independent (Garson, 2005). To examine multicollinearity, two values are examined, variance inflation factor (VIF) and tolerance coefficient. If the tolerance coefficient is close to zero, then multicollinearity is high. According to Garson, multicollinearity is a problem if the tolerance coefficient is less than .2. When examining the VIF some researchers use a cutoff of 5 to determine if multicollinearity is an issue. However, some researchers use 10 as a rule of thumb to determine if multicollinearity is an issue (Garson, 2005, Flouri, 2004). This study also uses 10. That is, VIF values over 10 indicate there is a problem with multicollinearity.

When examining the tolerance coefficient (TOL) and the VIF values for the independent variables, PE and EE do not have issues with multicollinearity in any steps of the regression analysis. That is, for the measured variables, all TOL values are above the accepted .20, and all VIF values are well below 10. When examining the moderator variables, the VIF values are below the accepted value of .20 for the calculated interaction terms for step 2 of equation III and step 2 of equation IV. However, the measured variables correlate to the treatments, as evidenced by the higher VIF scores (just below 10) when introducing the Word of Mouth treatment. The most important VIF scores, however, are all of those below 2 (See Table 31).

Table 31 -- Multicollinearity Statistics: Tolerance Coefficients (TOL) and VIF Values

Variables Entered	TOL	VIF	Variables Entered	TOL	VIF
Equation I; PIS			Equation IV: OCB		
Performance Expectancy	.742	1.349	Step 1:		
Effort Expectancy	.751	1.332	P. Expectancy (PE)	.978	1.023
WOM Treatment	.977	1.024	WOM Treatment	.978	1.023
				.	
Equation III: OCB			Step 2:		
Step 1			P. Expectancy	585	1.711
Performance Expectancy	.978	1.023	WOM Treatment	.101	9.947
WOM Treatment	.978	1.023	PE x WOM	.102	9.784
Step 2			Step 3:		
Performance Expectancy (PE)	.585	1.711	P. Expectancy	.585	1.711
WOM Treatment (WOM)	.101	9.947	WOM Treatment	.101	9.947
PE x WOM	.102	9.784	PE x WOM	.102	9.789
			PIS	.836	1.197

5.5.5 Grand Mean Centering

Use of grand mean centering helps to avoid multicollinearity problems in cases such as this where multicollinearity is a potential problem (Bickel and Howley, 2003). Although all independent variables are within acceptable limits regarding the tolerance and VIF calculations for the main effects, centering on the grand mean will help control multicollinearity for this study. Furthermore, the sum of the reported VIF and tolerance values were close to acceptable thresholds. The independent variables PE and EE were centered with regard to the grand mean. To test the moderating effects of negative WOM, interaction terms were created by multiplying centered PE and centered EE by the WOM treatment variable.

For regression analysis using grand mean centering, the dichotomous WOM treatment variable was multiplied by centered independent variables PE and EE to obtain the interaction term. When performing regression analysis, PIS on centered PE and centered EE, the majority of the results, as expected, were the same as the regression analysis with non-centered PE and EE. That is, the B, Std. Error and beta values were the same in both sets of analysis (See Table 32). Also, the tolerance and VIF values were the same for the predictor variables of both the centered analysis and the non-centered analysis. That is to say, with centering, the tolerance values and the VIF values were both within acceptable limits.

The difference in the two sets of analysis can be found with the constants. That is to say the B and the standard error values are different when using variables that have been centered on the grand mean. Centering on the grand mean helps to make the intercepts more interpretable. When grand mean centering is applied, the intercept refers to average level on the predictor of a particular respondent. The B and standard error (SE) values are higher with grand mean centering for the main effects (with centering B=4.248, SE=.087; without centering B=3.072 SE=.264). This was also the case when the interaction terms were entered into the equation on step 2. (with centering B= 4.347, SE= .088; without centering B= 3.015 and .317). The entire regression results with centering are presented in Table 32.

Table 32 -- Regression PIS on PE and EE and Treatment and Moderator using Grand Mean Centering

	B	SE	β
Step 1 (Ho 1a & 1b)			
(Constant)	4.348	.087	---
Centered P. Expectancy	.241	.057	.353***
Centered E. Expectancy	.068	.055	.102
WOM Treatment	-.013	.141	-.007
r^2= .156			
F= 11.052 p=.000***, df= 3			
Step 2 (Ho: 2a & 2b)			
(Constant)	4.347	.088	---
Performance Expectancy	.238	.076	.349**
Effort Expectancy	.083	.528	.124
WOM Treatment	.145	.120	.075
Centered PE x Treatment	-.002	.112	-.004
Centered EE x Treatment	-.034		-.082
Δr^2 =.001 r^2=.146			
F=6.557 p=.000, df= 5			

*** Indicates the item is significant at the p<0.001 level
** Indicates the item is significant at the p<.0.01 level
* Indicates the item is significant at the p<0.05 level

5.6 *Structural Equation Modeling (SEM)*

As noted earlier, the use of SEM in information systems (IS) research is continuing to grow in popularity (Gefen et al., 2000). Two SEM techniques that are prevalent in IS research are LISREL and Partial Least Squares (PLS). When deciding which SEM technique to use, this study examined the considerations mentioned by Gefen and his colleagues; theoretical foundation, robustness of measures and sample size requirement. When using

established theories, both LISREL and PLS are appropriate. However, when building theory or testing a newer theory, PLS may be more appropriate. Although this dissertation uses a theory that has been rigorously tested over time, it is applied in an IT context in a relatively novel manner. Therefore, PLS may be more appropriate for this research. The sample size is more appropriate for PLS also. It is recommended to have 10 times the number of items in the most complex construct (Gefen et al., 2000; Barclay et al. 1995). PIS is the most complex construct in this study and there are 8 items. This study contains 164 valid subject responses, which is well above the recommended number. Finally, all constructs in this dissertation are reflective, and PLS, like LISREL, is appropriate for analyzing reflective measures. Thus PLS was chosen as the SEM technique for this study using PLS Graph 3.0.

Table 33 reports the latent variables (LVs), all of the measures or items, the loadings, and the t-statistics for the loadings. The high loading and significant t-statistic for each item of every construct are an early indication of sound psychometric measurement tools. Gefen and Straub (2005) apply the standard used by Hair et al., (1998) to determine appropriate item loadings. If a coefficient is below .40, it is considered to not load highly. If an item loads above .60, the item loads highly. Latent variable PIS has some loadings below .60, but they are also above .40 so they were retained.

Table 33 Reflective Constructs

	Loadings	T-statistic		Loading	T-Statistics
Performance Expectancy			**Org Citizenship Behavior**		
PE1	.8754***	38.8897	OCBA1	.8514***	26.3290
PE2	.9255***	69.0112	ROCBA2	.8381***	23.0625
PE3	.9162***	61.0996	OCB2	.9043***	51.5599
PE4	.8150***	20.9251	ROCB2	.8818***	45.2413
Effort Expectancy			**Treatment**		
EE1	.8782***	17.9340	Treat	1.0000	0.0000
EE2	.8872***	15.2325			
EE3	.9233***	43.8395			
EE4	.9223***	22.9806			
Perceived Institutional Support			**EExTreat**		
PIS1	.8169***	24.1549	EE1xTreat	.9854***	12.6264
PIS2	.8506***	32.6592	EE2xTreat	.9965***	10.4338
RPIS3	.8105***	25.8213	EE3xTreat	.9662***	14.9404
PIS4	.5254**	6.8759	EE4xTreat	.9965***	10.4338
PIS5	.6668**	11.6762	**PExTreat**		
RPIS6	.5166*	5.1817	PE1xTreat	.9639***	37.3312
RPIS7	.6465**	13.0710	PE2xTreat	.9856***	35.7802
PIS8	.7415***	18.2463	PE3xTreat	.9929***	32.4818
			PE4xTreat	.9646***	21.3730

*** Indicates the item is significant at the p<0.001 level, two-tailed.
** Indicates the item is significant at the p<.0.01 level two-tailed.
* Indicates the item is significant at the p<0.05 level

Although all measures have been validated in prior research, the statistical analysis can easily demonstrate convergent or discriminate validity. According to Gefen et al., (2000) it is important to check that the average variance extracted (AVE) of each construct is larger than its correlation with the other constructs, and that each item has a higher loading on its assigned construct than on the other constructs. Such a condition demonstrates discriminant and convergent validity. AVE provides a measure for shared variance between a construct and its indicators (Fornell and Larcker, 1981) and is a measure of convergent validity. All AVEs are above the .50 threshold; therefore the data supports convergent validity. The AVEs are listed on the diagonals of Table 34.

Discriminant validity is tested comparing the AVE with correlations and by comparing the loadings and cross-loadings of the constructs. First of all, the AVE for a construct is compared with its correlations with other constructs. If the AVE is higher than these correlations, then the first portion of discriminant validity has been demonstrated. The data for this dissertation supports the first test of discriminant validity. This is illustrated in Table 34 where the diagonal values (AVE) are larger than their off-diagonal correlations for all constructs.

Table 34 -- AVE and LV Correlations

	PIS	PE	EE	OCB	Treat	EExT	PExT
Perceived Institutional Support (PIS)	**.500**	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -
Performance Expectancy (PE)	.449	**.782**	- - - -	- - - -	- - - -	- - - -	- - - -
Effort Expectancy (EE)	.269	.497	**.815**	- - - -	- - - -	- - - -	- - - -
Organization Citizenship Behavior (OCB) Intentions	.476	.344	.338	**.756**	- - - -	- - - -	- - - -
Treatment	-.024	-.049	-.100	-.140	**1.00**	- - - -	- - - -
EExTreatment	.055	.050	.146	-.034	.930	**.973**	- - - -
PExTreatment	.065	.225	.025	-.044	.908	.907	**.954**

Diagonal reports Average Variance Extracted (AVE)

The next step when discussing discriminant validity is to show that each indicator loads highly on the construct it belongs to, and that the construct item loads higher than the cross–loadings for the same construct. This demonstrates that the questionnaire item is indeed measuring the associated construct and not another construct. The loadings and cross loadings data is presented in Table 35 clearly shows that the PE indicators (PE1 – PE4) are higher for the PE construct than for other constructs. This is also true for the remaining constructs and their items. The data supports discriminant validity.

Table 35 -- Loadings and Cross-Loadings

The bold and highlighted items identify the items that belong to the column's construct

	PE	EE	PIS	OCB
PE1	**0.753**	-0.0492	0.048815	0.092332
PE2	**0.807**	-0.05391	0.074992	0.055395
PE3	**0.696**	-0.05172	0.015842	-0.03907
PE4	**0.783**	-0.1067	0.03506	-0.06154
EE1	0.2364	**0.7508**	0.027339	0.041861
EE2	0.4561	**0.7833**	0.037412	0.029333
EE3	0.4328	**0.8493**	-0.06939	-0.00087
EE4	0.2497	**0.8541**	0.019934	0.107191
PIS1	0.118289	0.168129	**0.6738**	0.041864
PIS2	0.034029	0.06766	**0.6869**	0.050076
RPIS3	0.141017	0.080539	**0.6724**	0.07079
PIS4	0.072765	0.05807	**0.504**	0.168446
PIS5	0.206547	-0.06155	**0.7388**	0.010055
RPIS6	0.157194	0.049644	**0.7548**	0.05622
PIS7	0.310574	0.120524	**0.5228**	0.16117
PIS8	0.094355	0.150976	**0.7019**	0.073416
OCBALUM1	0.205831	0.060204	0.070141	**0.7719**
ROCBALM2	0.183613	0.064457	0.035024	**0.776**
OCBFIN1	0.258251	0.186471	0.058092	**0.8681**
ROCBFIN2	0.29562	0.14383	0.067711	**0.8132**

5.6.1 Structural Model Assessment

Assessing the structural model involves determining the r^2 value for each LV and ascertaining the standard path coefficient for each relationship from exogenous variables to endogenous variables. PLS offers two techniques to assess statistical significance; the bootstrap and the jackknife techniques. The jackknife technique is a more cursory algorithm and the hypotheses are tested by assessing statistical significance of the path coefficients. This technique can be used to save resources and reduce execution time for large data sets. Bootstrapping is a more exact calculation of measures. The statistical findings using the bootstrap technique for the revised model are shown in Figure 3 with the path coefficients along the arrows.

Depicting a model containing moderators with PLS differs from a traditional representation of that kind of model. With a PLS model, the moderator, in this case WOM treatment, is shown as an independent variable with a direct path to PIS. Interaction terms are then calculated for each independent variable. These interaction terms are calculated by multiplying every indicator in the moderator by every indicator in the independent variable (Chin et al., 2003). Conceptually, these interaction terms are depicted as having a direct path to PIS. The PLS model depicted in Figure 3 is conceptually equivalent to the research model presented earlier in Figure 2. In Figure 3, the path loadings and the r^2 values for each LV are provided. The solid bold arrow represents the path loadings that are significant. The dashed lines represent the loadings that are low or non-significant. In PLS, instead of focusing on mediation, we consider direct effects, indirect effects, and total effects. Direct effects are evaluated by examining the path from the independent variable to the outcome variable. In this study, the direct effects are those paths from PE and EE to OCB Intentions. Indirect

effects are determined by the product of the path from the independent variable to the mediator and the path from the mediator to the outcome variable. The total effect is the sum of the direct and indirect effects. Table 36 gives a summation of the path analysis for the PLS model.

Figure 3 -- Research Model for PLS

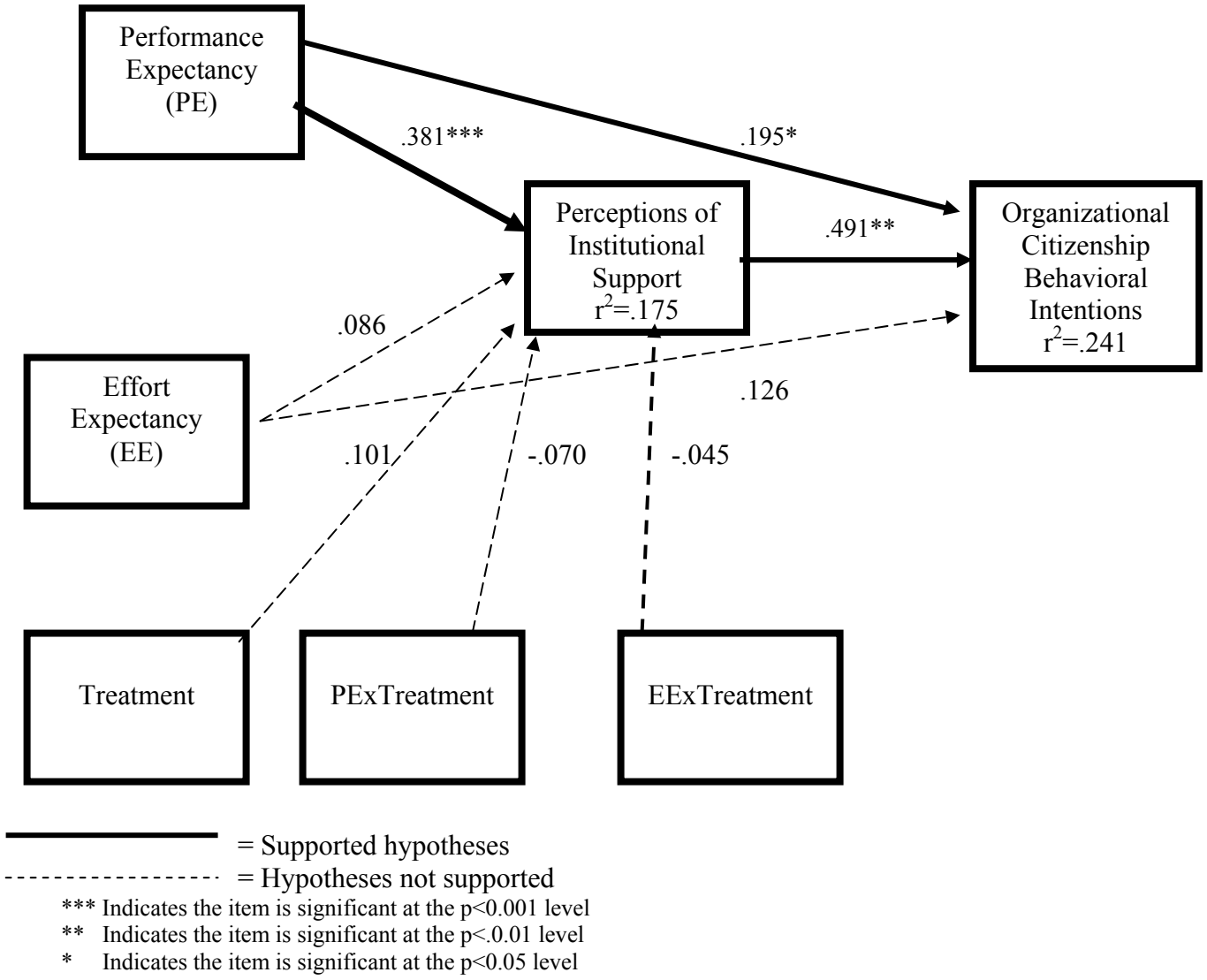


Table 36 -- Direct Effects -- Indirect Effects

PATH	Standardized Path Coefficient	T-value for Standardized Path Coefficient	Indirect effects	Total Effects
PE → PIS	.381	4.679***		.381
EE → PIS	.118	1.117		.118
PE → OCB	.195	2.72*	.187	.362
EE → OCB	.126	.174	.042	.168
PIS→ OCB	.491	6.870***		.491

*** Indicates the item is significant at the p<0.001 level
** Indicates the item is significant at the p<.0.01 level
* Indicates the item is significant at the p<0.05 level

As indicated in Figure 3, the path coefficient for performance expectancy (PE) to perceived institutional support (PIS) is significant (t= 2.96, p<.05) and yields an r^2 of .175. Thus, perceptions of technology in terms of performance expectancy significantly predict perceptions of institution support accounting for about 17% of the variance in participants' attitudes toward the organization.

While performance expectancy contributes to perceptions of support, the PLS analysis also shows a significant impact on organizational citizenship behavioral intentions. The path coefficient between PIS and OCB is significant (t= 7.82, p<.01) with an r-squared of .241. This illustrates a strong impact of perceptions of institutional support on level of behavioral citizenship intentions (See Figure 3). The research model suggests that PE and EE will not only predict PIS, but also OCB intentions. However, the impact of expectancies on OCB intentions is expected to be indirect. That is, the expectancies are expected to influence OCB intentions through PIS.

5.6.2 Summary of Statistical Analysis Multiple Regression and PLS

The statistical findings support some of the major hypotheses presented in the research model. These findings are given even more support through two statistical methods; regression analysis and PLS analysis. First of all, there was a main effect from performance expectancy (PE) to perceived institutional support (PIS) as predicted by Hypothesis 1a. That is, higher levels of PE yield higher levels of perceived support. This prediction was supported both in the regression analysis and the PLS analysis. In the regression analysis, the impact of PE on PIS was significant at the .00l level. With the PLS analysis the prediction of the influence of PE on PIS was also significant at the .001 level. It was hypothesized (H1b) that effort expectancy would have a similar influence on PIS. However, this hypothesis was not supported. The research model also expected that negative WOM would moderate the impact of both PE and EE on PIS. No support was found for these hypotheses (2a or 2b). That is, negative WOM did not moderate the relationships of PE and EE on PIS. These predictions were also insignificant in the PLS analysis. That is, the main effect of EE on PIS, and the moderating impact of negative WOM were not supported.

One important comparison between the PLS analysis and the regression analysis is the adjusted r^2 values when examining step 2 of the regression analysis which covers hypotheses 1a, 1b, 2a, and 2b, r^2= .146. In the PLS analysis, where the main effects of PE and EE are examined and the moderating effects of negative WOM are also in the model, r^2= .175, because of the different algorithms used in the statistical analysis, they do not agree precisely. However it is clear that they are close.

There is strong support for the predicted relationships of PIS on OCB intentions. The statistical analysis suggests that H3 is supported. That is to say, higher levels of institutional support lead to higher levels of OCB intentions. This was also supported with both statistical methods when comparing the r^2 values, the r^2= .239 with regression analysis (see step 3 of Table 30) and .r^2 = .241 in the PLS model (see Figure 3).

And finally, the statistical analysis suggests support for the mediating role of PIS on the relationship of PE on OCB intentions (H4a). Because EE did not have a significant relationship on PIS, the mediation analysis for that hypothesized relationship (H4B) was dropped. The findings of the statistical analysis for this dissertation are summarized in Table 37.

Table 37 -- Summary of Findings

	Hypothesis	Findings
H1a	Judgments of PE will positively affect PIS	Supported
H1b	Judgments of EE will positively affect PIS	Not supported
H2a	Negative WOM will negatively moderate PE and PIS	Not supported
H2b	Negative WOM will negatively moderate EE and PIS	Not supported
H3	PIS will positively affect level of OCB intentions	Supported
H4a	PIS mediates the relationship of PE on OCB	Supported
H4b	PIS mediates the relationship of EE on OCB	Not supported

These findings were supported both in the regression analysis and the PLS analysis. The statistical analysis clearly shows support for hypotheses 1a, 3 and 4a. The discussion also shows some of the similarities in the findings between two statistical methods. Reporting both statistical methods serves two purposes. First of all, it strengthens the findings by showing that the predictions are consistent across different statistical analysis. These statistical methods include the more traditional analysis of multiple regression and second

generation analysis of PLS, which is growing in use in the IS field. By providing findings with regression analysis, it allows future researchers to build on prior research that utilizes first generation techniques. The next section will discuss conclusions and contributions of this dissertation.

6 DISCUSSION AND CONTRIBUTIONS OF RESEARCH

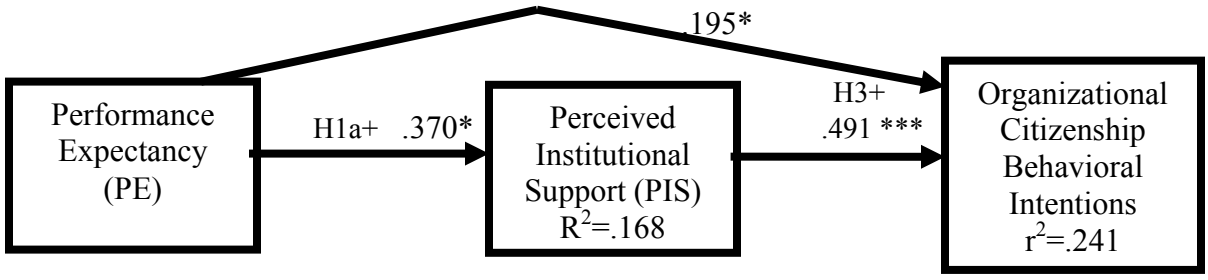
Results from the study provide some support for the role of technology on perceptions of institutional support as well as citizenship behavioral intentions. The analyses find support for Hypotheses 1a, 3, and 4a. Performance expectancy significantly predicts perceptions of institutional support (Hypothesis 1a). These perceptions of support contribute to organizational citizenship behavioral intentions by students who participated in this research (Hypothesis 3). Most interestingly, perceptions of support mediate the relationship between performance expectancy and citizenship intentions (Hypothesis 4a). That is to say, the impact of IT perceptions on OCB works through PIS. Clearly, performance expectancy rather than effort expectancy (Hypotheses 1b & 4b) is an important driver of how perceptions of technology can impact the extent to which individuals feel supported by their institution.

While the findings provide some support for the role of technology perceptions on perceptions of institutional support and organizational citizenship behavioral intentions, there was no support found for the impact of negative word of mouth on perceptions of institutional support or citizenship behavioral intentions (Hypotheses 2a & 2b). While the manipulation check of negative word of mouth showed that students recognized the negative information about the technology, this external feedback did not impact their views of the technology or their attitudes toward the organization. Thus, perceptions of support were

driven by performance expectancy, which was not significantly influenced by the presence of negative word of mouth within the current research.

Based on the statistical findings, a more useful research model would omit any moderating impact of negative WOM (see Figure 4). The impact of effort expectancy on PIS would also be eliminated from the model. When eliminating EE as a direct effect on PIS, the r^2 drops slightly from .175 to .168. The next sections will discuss the theoretical and practical implications of the findings.

Figure 4 -- Revised Model of IT Impact on Institutional Support and OCB



*** Indicates the item is significant at the p<0.001 level, two-tailed.
** Indicates the item is significant at the p<.0.01 level two-tailed.
* Indicates the item is significant at the p<0.05 level

The finding that performance expectancy (PE) significantly influences PIS provides initial support for the idea that beliefs about technology spill over onto beliefs about the organization. Recall that PE measures organizational members' perceptions of technology that is sanctioned by the organization. To the extent that individuals feel that technology is useful in helping them achieve performance goals and complete work-related tasks, they will

conclude that the organization supports them. This finding validates the assumption within this work that judgments about actions of the organizational technology contribute to individual attitudes toward the organization itself. Thus, technology can be viewed as an agent of the organization in much the same way as HR policies and programs are viewed. This finding helps to provide an important theoretical link between the Theory of Reasoned Action (TRA, Fishbein, M. and Azjen, 1975), which is the theoretical basis for TAM, organizational support theory and PIS. Thus, the finding that PE, a belief, influences PIS and eventually intentions (OCB), reveals that members see the usefulness of technology as an indication of how the organization values them and cares about them.

The practical implication of this result for organizations suggests that firms must pay attention to the perceived usefulness/ performance expectancy of the technology it adopts, because it could negatively (or positively) impact individuals' perceptions of support, which drive citizenship behavioral intentions. As we know from previous work in this area, perceptions of support can also have an impact on other work-related attitudes not measured in this study (e.g., job satisfaction, organizational commitment, job involvement) and/or key human capital outcomes (e.g., absenteeism, voluntary turnover). This provides evidence that perceptions of technology are an important agent of the organization which should be addressed by future research utilizing organizational support theory within an IT context

The importance of technology as an agent of the firm is highlighted by another finding of this study. Results show that PIS influences organizational citizenship behavior (OCB). When individuals perceive that the organization values them, they will return that support with discretionary actions that benefit the firm known as organizational citizenship. This finding is quite consistent with social exchange theory, and highlights the reciprocal

exchange that takes place between individuals and their institution. Because organizational citizenship involves discretionary or non-mandatory actions that benefit the organization, it is important to understand how these behaviors can be enhanced or obstructed. Previous research has shown that HR policies, supervisory relationships, and perceptions of fairness can impact this type of discretionary behavior. The current research represents a contribution to this work by including organizational technology as an additional driver of OCB. If an institution (e.g., a university) wants to build strong member relationships and increase non-mandatory actions that benefit it, some attention should be paid to factors that drive perceptions of support. The current research provides support that the perceived usefulness of organizational technology is one of these important factors that deserves additional attention.

One of the key findings within the current research is that PIS mediates the relationship between PE and OCB. This means that within a university context, IT perceptions play a role in how a university is perceived by the students. Furthermore, it shows that the quality of the technology that is provided by a university is an indication of whether students believe that the university values them. Perceptions of support play a critical mediating role that should not be overlooked, especially within the context of organizational technology. This finding suggests that it is not the perceptions of technology that are driving whether or not the individual will act in a manner that supports the organization, but it is the perception of support that drives these behavioral intentions. Clearly, there is an inference that individuals draw from technology that is provided by the organization. These favorable perceptions of technology can result in favorable OCB outcomes such as strong alumni affiliation and long-term support of the institution.

While support was found for the importance of performance expectancy on perceptions of institutional support, effort expectancy (EE) did not have a significant influence on PIS. One possible explanation could be found in some of the previous work. Based on the perceived ease of use construct (PEOU), the impact of perceived ease of use (the predecessor of effort expectancy) on key behavioral outcomes has been somewhat mixed. Some studies show that it has an impact on technology acceptance and use, while other studies have found no impact (Venkatesh et al, 2003). In addition, some research has found that over time ease of use becomes less important (Venkatesh et al., 2003). This finding has relevance within the current research context. Because a majority of the participants had some level of experience with the institution and its website (the majority were juniors), it is reasonable to expect that EE may be less relevant for these individuals than newcomers to the university. Thus, the more experience an individual has with the technology, the less perceived ease of use is a factor in driving perceptions of support. It is a reasonable explanation of the lack of significance or EE, and suggests that this aspect of technology perception is more relevant with the adoption of new technology than individuals' evaluations of ongoing technology (e.g., website).

Most surprising is the lack of findings concerning negative word-of-mouth on the impact of PE and EE on perceptions of institution support and organizational citizenship behaviors. Prior research supported the expectation that negative information would be salient to perceivers, and thus drive their overall evaluations within the situation. There are several plausible explanations for the lack of support for the influence of negative WOM. One possible explanation is the static nature of the way WOM was operationalized. Recall that participants were directed to a static bulletin board that contained negative comments

from unknown students. However, some other research has used negative comments by a face-to-face confederate to manipulate WOM (e.g., Galletta et al., 1995). Negative comments that are delivered face-to-face might have a more powerful impact on perceptions of technology feedback from static electronic communication. Negative WOM in the current research not only occurred via a static medium, but also was provided by an unknown and unseen student peer. Prior WOM research suggests that the strength of the social tie between the sender and receiver has an impact on how the information is valued and acted upon. Although the WOM "sender" was identified by a user ID that contained the university name, this "student" was still anonymous and had no prior relationship or social tie to the student participant. Without the presence of a clear social tie or salient group membership, subjects may have recognized the negative comments, but disregarded them as important information to be used when evaluating the technology and the organization. Thus, a follow-up research endeavor would be to vary the type of WOM media (e.g., face-to-face) and the strength of the social tie (unidentified student, acquaintance, friend) and measure the impact on perceptions of technology and perceived institutional support. This type of future research would provide a more rigorous test of the impact of negative WOM on perceptions of technology and institutional support than did the current research.

6.1 *Contributions, Limitations and Future Directions*

This study offers several contributions to the field of IS and to our understanding of individual-organizational interactions. First of all, we gain insight into how technology, such as a university web portal, while designed to represent an organization and provide organizational support to its members, may also impact perceptions about the organization among its members. Prior to this study, little had been reported about how perceptions of the

organizational technology may spill over onto perceptions of the organization. Because of the nature of the individual-organization social exchange, this implication is also relevant to the employee-employer context. That is to say, perceptions of technology that an employer provides for the employee to do his/her tasks may spill over to perceptions of the organization.

The findings of this dissertation can be generalized, with caution, to a broader context of the employee-employer environment. This generalization can be made both from a theoretical and a practical perspective. From a theoretical perspective, the same theory, organizational support theory (OST), that explains the employee-employer relationship, is used to explain and understand the student-university/institution relationship. This extension began with LaMastro (2001) and is continued with this dissertation. From a practical perspective, the university is a social structure, much like the corporation is a social structure. Some of the same social influences that would cause a member of a corporation, an employee, to feel valued by a corporation may also influence the student, e.g., an organizational member, in the university/institutional organization. According to LaMastro (2001) the social exchange that exists between an employee and the organization also exists between the student and the university.

Providing useful technology could lead to strong levels of perceived support by the employee to the employer. High levels of perceived support can lead to other positive outcomes for the organization. This study focused on OCB intentions. Prior IS research has designated a number of important roles for technology within the organization. The current research adds yet another important role to this critical list; technology as an agent of the organization. Web portals within organizations often provide knowledge and services on

behalf of the organization. In fact, many of these services were once administered through a human representative of the organization. Based on organizational support theory, this dissertation contributes the additional finding that, under certain conditions, individuals may treat technology as such an agent and respond toward that technology in a manner that also impacts how they perceive and interact with a supervisor, another representative, or the organization itself.

Another contribution this study offers is that it provides an additional theoretical framework for the role of performance expectancy and its outcomes. Prior TAM research demonstrated that IT beliefs impact behavioral intentions and technology usage. The current work extends the outcomes of IT beliefs to now include the impact of IT beliefs on attitudes toward the organization. This dissertation demonstrates that performance expectancy has additional outcomes which warrant further investigation; namely perceived institutional support (PIS). Future research should explore the possibility that organizational support theory can be used to explain other IT beliefs and provide additional support for the impact IT has on organizational perceptions and attitudes and ultimately perceived support outcomes.

Another positive outcome of this study is that it contributes to the reference discipline of organization behavior/industrial organizations. Prior research has demonstrated a number of antecedents to perceived organizational support. The findings of this dissertation demonstrate that technology can be viewed as an antecedent to perceived support.

Finally, this study also extends LaMastro's work by examining the mediating impact of perceived support in a university context. The findings show that, consistent with the employee-employer context, perceived support also mediates key antecedents with key

outcomes of perceived support within a university setting. This provides evidence for the robust nature of the perceived support construct to translate across specific domains (e.g., organization, institution, university). The current work, coupled with the previous work of LaMastro, suggests that organizational support theory can generalize across many different types of institutions. This idea has significant implications for future research. Notions of technology acceptance and its impact on perceptions of support could be extended to other types of organizations (e.g., governmental, non-profit, and for-profit firms) in various sectors and industries. There is the potential for a rich agenda of research questions for future scholars to address.

6.2 *Conclusions and Limitations*

The primary objective of this dissertation was to understand the impact of web portal perceptions on organizational attitudes. The study shows that performance expectancy influences perceived institutional support and impacts organizational citizenship behavior. While the current model provides some support for this relationship, the magnitude of the overall model was moderate. Findings show that PE explains 17.5% of the variance in PIS. This implies that there are other factors that influence PIS, and thus a more complex model should be developed. While WOM was explored in the current research, there are clearly IT and non-IT influences that were excluded from the current model. Future research should explore some of the additional factors that recent IT research has identified as being important in explaining technology acceptance and utilization. These factors may also influence PIS in a similar manner as PE. In addition, the inclusion of organizational support theory suggests a number of non-IT variables that may play an important role that were not examined by the current work.

While the context of this current work focused on a university web portal, the subjects included in this study were exclusively students. Undoubtedly, an organization's web portal has an impact on a number of other members of the university not examined in the current research. Faculty, staff, administrators and alumni all access and utilize the website for various work-related and personal goals and objectives. One limitation of the current work is that it focuses on a single stakeholder within the university context. A balanced stakeholder approach would provide rich information for organizations who seek to understand the role that technology plays in helping to facilitate versus obstruct their overall effectiveness.

The experimental setting does not allow for studying the impact of IT on PIS over time. Future studies may find that over time, perceptions of technology (both PE and EE) may have more or less of an impact as the users become more familiar with the technology. In addition, this study focuses on one aspect of organizational technology, the website. Other forms of technology were excluded from the current work. These other forms, such as chatrooms, instant messaging, etc., would be an interesting contrast to the relatively static nature of an electronic bulletin board.

Additional operationalizations of IT could also add to this body of research. It might be the case that other IT forms have different impacts on the development of and level of perceived support. This study makes assertions about the influence of website perceptions on PIS; however, the proposed relationships in this study may not be applicable to all types of technology. This limitation could be explored in future research which would provide many rich opportunities to expand this research stream.

This study provides several contributions to the field of IS. These contributions include, 1) applying organizational support theory to an IS context; 2) demonstrating IT as an agent of the organization; 3) showing that IT impacts PIS outcomes through PIS mediation; 4) demonstrating the strength of the predictions in both first and second generation statistical analysis; and most importantly; 5) showing that IT belief outcomes go beyond intent to the use of technology. This study gives empirical evidence that IT beliefs have an impact on attitudes about the organization and behavioral intentions toward the organization. This study will have an impact on future IS research for years to come.

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Appendix 1-- Script and Procedures for Website Utilization Study

Procedures (don't read --. Things to consider/do before Experiment begins)

- All participants sitting at a computer
- Consent forms will be checked for all participants. If the subject does not have a consent form, one will be completed upon entering the lab.
- Place book number on booklet
- Have students sign the sign-in sheet. Record booklet number on sign-in sheet next to the name. (Can be done on the way out also)

SCRIPT (READ THIS SECTION)

Welcome to the website utilization study. Please turn off all cell phones, pager, PDAs and all mobile devices at this time. During the next 45 minutes you will be asked to visit a website and to retrieve certain information. During this time we ask that you do not talk with anyone and we ask that you work independently of your neighbor.

Your rights as a participant: You have a right to terminate your participation at any time. Simply quietly approach the monitor and asked to be excuses. Please understand that early termination at any time, although it is your right to do so, will cause you to forfeit any chance of credit or other incentives

- You must follow instructions to receive your incentive (credit or other)
- The coordinator has the right to terminate your participation if the rules are not followed.
- Do not browse the web for any other reason but for the research experiment
    - Doing so could disqualify you from the study and you will forfeit your credit
- At this time ensure you are logged.
- Are you logged on?
- Please open 2 sessions of Internet Explorer 1 to the University home page
- Open the 2nd to the webpage in the center of page 1 of your booklet.
    - If treatment I (neg-WOM I book A- green) upitt1.group-research.org
    - If treatment II (neutral Book C- pink)pitt2.group-research.org http://pittstudy3.group-research.org
- Read top of page 1 of booklet (out-loud)

The University of Pittsburgh attempts to provide services for its students. We believe that the university website is a part of this process. Read along with me on page 2 of your hand-out entitled University Website Study.
Using GOOGLE IS NOT AUTHORIZED.

Appendix 2 -- Negative WOM Treatment

University Research Group World-Wide

Research Partners

Auburn University
Brown University
Cornell University
Columbia University
Florida State
Georgia Tech
Howard University
Indiana University
Insead
London Business School
Notre Dame
NYU
Penn State
Temple University
University of Illinois
University of Florida
University of Kansas
University of Oklahoma
University of Pittsburgh
University of Texas
University of Washington

webstudy@group-research.org

Website Feedback: The University of Pittsburgh

PITT = University of Pittsburgh

User-ID	User Comments
PITT2002 >	Pitts' website has been up and running for a while now.
PITT1010>	I visit the website regularly.
PITT1000>	There is a lot of work that goes into most websites
PITT1200>	I think this website SUCKS! I've seen much better websites
PITT1220>	some websites have a lot of pictures
PITT1400>	THIS WEBSITE IS A WASTE OF TIME AND MONEY
PITT1040>	has this website been up long? How many people use it?
PITT2020>	Which school has the best web-page?
PITT2030>	Most students HATE this website
PITT2010>	I DON'T LIKE THIS SITE AT ALL. It's too static
PITT2002>	The information in this site is SO-OUTDATED!
PITT1020>	Websites are a good thing to have access to
PITT1050>	Where are the people who work on this website? Any idea?
PITT2040>	Does this website change?
PITT2050>	The information on this site is OLD, OUTDATED and DUMB!
PITT2250>	I'm a graduate student at Pitt. I almost didn't attend Pitt, because when I searched for information on the website, I couldn't find it. They just didn't put enough information on the website to make a decision. I took weeks before someone called and answered my questions. Now that I'm a student, not much has changed.

When you have finished reading the comments, return to page 1 of your experiment hand-out.

To contact us:

Phone: 212-753-4601
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E-mail: webstudy@group-reearch.org

Appendix 3 -- Neutral WOM Treatment

University Research Group World-Wide

Research Partners

- Auburn University
- Brown University
- Cornell University
- Columbia University
- Florida State
- Georgia Tech
- Howard University
- Indiana University
- Insead
- London Business School
- Notre Dame
- NYU
- Penn State
- Temple University
- University of Illinois
- University of Florida
- University of Kansas
- University of Oklahoma
- University of Pittsburgh
- University of Texas
- University of Washington

Website Feedback: The University of Pittsburgh

User-ID PITT = University of Pittsburgh

User-ID	User comments
PITT2002 >	Pitts' website has been up and running for a while now.
PITT1010>	I visit the website regularly.
PITT1000>	There is a lot of work that goes into most websites
PITT1200>	I think this website has been worked on quite a bit
PITT1220>	some websites have a lot of pictures
PITT1400>	THIS WEBSITE IS USED BY STUDENTS AND FACULTY
PITT1040>	has this website been up long? How many people use it?
PITT2020>	Which school has the best web-page?
PITT2030>	Most students have seen this website
PITT2010>	I've used this website a few times. How about the rest of you?
PITT2002>	The information in this site has been placed here for us to use!
PITT1020>	Websites are a good thing to have access to
PITT1050>	Where are the people who work on this website? Any idea?
PITT2040>	Does this website change?
PITT2050>	The information on this site is up and running! How about other schools?
PITT2250>	I'm a graduate student at Pitt. Some people search for information on the school's website when they apply to the school. Sometimes schools put plenty of information on their sites and sometimes they don't

When you have finished reading the comments, return to page 1 of your experiment hand-out.

To contact us:

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Appendix 4 --Task for Participants

I. Athletics

1) When is/was the last home football game of the season? _____
   1a) Who is/was the opponent? _____

2) When is/was the last home women's basketball game of the season?
   _____
   2b) Who is/was the opponent? _____

II. Academics

1) In the College of Business Administration, how many sections of BUSORG 1101 are offered in the Fall term 2004? _____

2) What is the last day of classes for undergraduates for the Spring term 2005? _____

III. Student body

1) How many full-time undergraduate students attend The University?_____
2) How much is out-of-state tuition for undergraduate students?_____
3) What is the male-to-female ratio of the Undergraduate Student Body? _____

IV. Research

Dr. Laurie Kirsch is an Associate Professor at the University of Pittsburgh (Katz). In 2002 she published an article about controlling information systems development projects. She was a lead author on the article

1) Name the journal it was published in _____

2) Name the Second Author (Last name is sufficient)_____

3) What university is this 2nd author from?
   _____

4) Dr. Detmar Straub is a leading researcher in Information Technology and is a professor in a major Business school of a state university. He conducts a variety of business information technology (IT) research. This research includes topics about website use.

a. He is a co-author of an article published for a DEC 2004 journal that is already available. This article is about trust in e-commerce article.
Name article _____
Name the Journal _____

STOP! DO NOT Continue UNTIL you have completed the questions above or until instructed to do so.

Appendix 5 – Measures

Performance expectancy Items 1-4. Venkatesh et al., (2003**)**
Effort Expectancy Items 5 -8 Venkatesh et al., (2003)

		Strongly Disagree			Neither Agree/ Disagree			Strongly Agree
PE1	I find the system useful while being a student	1	2	3	4	5	6	7
PE2	Using the system enables me to accomplish tasks more quickly as a student	1	2	3	4	5	6	7
PE3	Using this system increases my productivity	1	2	3	4	5	6	7
PE4	If I use the system I will increase my chances of performing better as a student	1	2	3	4	5	6	7
EE1	Learning to operate the system would be easy for me.	1	2	3	4	5	6	7
EE2	It would be easy for me to become skillful at using the system.	1	2	3	4	5	6	7
EE3	I would find the system easy to use	1	2	3	4	5	6	7
EE4	Learning to operate this system is easy for me	1	2	3	4	5	6	7

Perceived Institutional Support
LaMastro, (2001) Eisenberger et al., (1997)
Items 3 and 6 are reverse coded

		Strongly Disagree			Neither Agree/ Disagree			Strongly Agree
1	The University of Pittsburgh strongly considers my goals and values.	1	2	3	4	5	6	7
2	The University of Pittsburgh really cares about my well-being.	1	2	3	4	5	6	7
3	The University of Pittsburgh shows very little concern for me.	1	2	3	4	5	6	7
4	The University of Pittsburgh would forgive an honest mistake on my part.	1	2	3	4	5	6	7
5	The University of Pittsburgh cares about my opinions as a student	1	2	3	4	5	6	7
6	If given the opportunity, The University of Pittsburgh would take advantage of me.	1	2	3	4	5	6	7
7	Help is available from the University of Pittsburgh when I have a problem.	1	2	3	4	5	6	7
8	The University of Pittsburgh is willing to help me when I need a special favor.	1	2	3	4	5	6	7

Appendix 5 (cont'd)

Negative WOM manipulation check

Consider the user reactions to The University of Pittsburgh's website that you read earlier http://upitt1.group-research.org)

		Strongly negative			Neither Positive/ Negative			Strongly Positive
12	How would you categorize those comments	1	2	3	4	5	6	7
		Strongly Disagree			Neither Agree/ Disagree			Strongly Agree
13	The user reactions I read were very negative	1	2	3	4	5	6	7
14	The user reactions I read were very positive	1	2	3	4	5	6	7

Computer Efficacy (Compeau and Higgins, 1995)

Please complete the following sentence. "I could complete most tasks using an unfamiliar software package…"

		Not at all confident			Neutral			Totally Confident
1	If there was no one around to tell me what to do as I go	1	2	3	4	5	6	7
2	If I had never used a package like it before	1	2	3	4	5	6	7
3	If I had only the software manual for reference	1	2	3	4	5	6	7
4	If I had seen someone else using it before trying it out myself	1	2	3	4	5	6	7
5	If I could call someone for help if I got stuck	1	2	3	4	5	6	7
6	If someone else would help me get started	1	2	3	4	5	6	7
7	If I had a lot of time to complete the job for which the software was provided	1	2	3	4	5	6	7
8	If I had just the built-in help facility for assistance	1	2	3	4	5	6	7
9	If someone showed me how to do it first	1	2	3	4	5	6	7
10	If I had used similar packages before this one to do the same job	1	2	3	4	5	6	7

Organizational Citizenship Behavior Intentions: (LaMastro, 2001)

Please use the scale given to answer the following questions concerning your future intentions as a University of Pittsburgh alumnus.

		Strongly Disagree			Neither Agree/ Disagree			Strongly Agree
1	I intend to contribute financially to the University of Pittsburgh after I graduate	1	2	3	4	5	6	7
2	I intend to be an active University of Pittsburgh alumnus after I graduate	1	2	3	4	5	6	7
3	The likelihood of me financially contributing to The University of Pittsburgh upon graduation is not very good.	1	2	3	4	5	6	7
4	The likelihood of me being an active University of Pittsburgh alumni is not very good.	1	2	3	4	5	6	7